



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



Это цифровая копия книги, хранящейся для потомков на библиотечных полках, прежде чем ее отсканировали сотрудники компании Google в рамках проекта, цель которого - сделать книги со всего мира доступными через Интернет.

Прошло достаточно много времени для того, чтобы срок действия авторских прав на эту книгу истек, и она перешла в свободный доступ. Книга переходит в свободный доступ, если на нее не были поданы авторские права или срок действия авторских прав истек. Переход книги в свободный доступ в разных странах осуществляется по-разному. Книги, перешедшие в свободный доступ, это наш ключ к прошлому, к богатствам истории и культуры, а также к знаниям, которые часто трудно найти.

В этом файле сохранятся все пометки, примечания и другие записи, существующие в оригинальном издании, как напоминание о том долгом пути, который книга прошла от издателя до библиотеки и в конечном итоге до Вас.

Правила использования

Компания Google гордится тем, что сотрудничает с библиотеками, чтобы перевести книги, перешедшие в свободный доступ, в цифровой формат и сделать их широкодоступными. Книги, перешедшие в свободный доступ, принадлежат обществу, а мы лишь хранители этого достояния. Тем не менее, эти книги достаточно дорого стоят, поэтому, чтобы и в дальнейшем предоставлять этот ресурс, мы предприняли некоторые действия, предотвращающие коммерческое использование книг, в том числе установив технические ограничения на автоматические запросы.

Мы также просим Вас о следующем.

- Не используйте файлы в коммерческих целях.
Мы разработали программу Поиск книг Google для всех пользователей, поэтому используйте эти файлы только в личных, некоммерческих целях.
- Не отправляйте автоматические запросы.
Не отправляйте в систему Google автоматические запросы любого вида. Если Вы занимаетесь изучением систем машинного перевода, оптического распознавания символов или других областей, где доступ к большому количеству текста может оказаться полезным, свяжитесь с нами. Для этих целей мы рекомендуем использовать материалы, перешедшие в свободный доступ.
- Не удаляйте атрибуты Google.
В каждом файле есть "водяной знак" Google. Он позволяет пользователям узнать об этом проекте и помогает им найти дополнительные материалы при помощи программы Поиск книг Google. Не удаляйте его.
- Делайте это законно.
Независимо от того, что Вы используете, не забудьте проверить законность своих действий, за которые Вы несете полную ответственность. Не думайте, что если книга перешла в свободный доступ в США, то ее на этом основании могут использовать читатели из других стран. Условия для перехода книги в свободный доступ в разных странах различны, поэтому нет единых правил, позволяющих определить, можно ли в определенном случае использовать определенную книгу. Не думайте, что если книга появилась в Поиске книг Google, то ее можно использовать как угодно и где угодно. Наказание за нарушение авторских прав может быть очень серьезным.

О программе Поиск книг Google

Миссия Google состоит в том, чтобы организовать мировую информацию и сделать ее всесторонне доступной и полезной. Программа Поиск книг Google помогает пользователям найти книги со всего мира, а авторам и издателям - новых читателей. Полнотекстовый поиск по этой книге можно выполнить на странице <http://books.google.com/>



2872

THE
ZOOLOGICAL RECORD

FOR 1888;

BEING
VOLUME THE TWENTY-FIFTH
OF THE
RECORD OF ZOOLOGICAL LITERATURE.

EDITED BY
FRANK E. BEDDARD, M.A., F.Z.S.,
PROSECTOR AND DAVIS LECTURER TO THE ZOOLOGICAL SOCIETY OF LONDON.

Explorate solum : sic fit via certior ultra.

LONDON :
GURNEY & JACKSON, PATERNOSTER ROW.
M.DCCC.XC.

EDITOR'S PREFACE.

THE staff of the Recorders has undergone some alteration, owing to the retirement of Dr. Fowler and Prof. Sollas. Their places have been taken by Mr. P. Chalmers Mitchell, Mr. O. H. Latter, and Mr. C. Warburton. Mr. Mitchell has recorded the *Vermes* for the present volume; Mr. Latter the *Echinodermata* and *Spongiae*; and Mr. Warburton the *Crustacea* and *Protozoa*. Mr. Arthur Thomson found himself unable to continue recording the last-mentioned group and *Celenterata*. Mr. Hoyle has supplied the Record of the *Celenterata*, in addition to those of the groups which he recorded in the last volume.

FRANK E. BEDDARD.

LIST OF THE ABBREVIATED TITLES
OF THE PRINCIPAL
JOURNALS AND TRANSACTIONS OF LEARNED SOCIETIES
WHICH CONTAIN ZOOLOGICAL PAPERS.

- A Magyar Akad. Eökön.*—A Magyar tudományos Akadémia évkönyvei.
- Abh. Ak. Berl.*—Abhandlungen der königlich Akademie der Wissenschaften zu Berlin. (Also *SB.*)
- Abh. bayer. Ak.*—Abhandlungen der mathematisch physikalischen Classe der k. bayerischen Akademie der Wissenschaften (Munich). (Also *SB.*)
- Abh. böhm. Ges.*—Abhandlungen der mathematisch-naturwissenschaftliche Classe der k. böhmischen Gesellschaft der Wissenschaften (Prague). (Called also *Rozpravy tridy mathematicko-přirodovědecké královské české společnosti nauk.*) (Also *SB.*)
- Abh. Ges. Götting.*—Abhandlungen der k. Gesellschaft der Wissenschaften zu Göttingen.
- Abh. Ges. Halle*—Abhandlungen der naturforschenden Gesellschaft in Halle. (Also *Ber.*)
- Abh. Ges. Hamb.*—Abhandlungen aus dem Gebiete der Naturwissenschaften herausgegeben vom naturw. Verein in Hamburg.
- Abh. Ges. Isis*—Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' in Dresden. (See *SB.*)
- Abh. Ges. Königsb.*—Abhandlungen der k. physikalisch-ökonomischen Gesellschaft in Preussen (Königsberg). (Also *SB.*)
- Abh. naturf. Ges. Görlitz*—Abhandlungen der naturforschenden Gesellschaft zu Görlitz.
- **Abh. naturh. Ges. Nürnberg*—Abhandlungen der naturhistorischen Gesellschaft zu Nürnberg. (See *J.B.*)
- Abh. sächs. Ges.*—Abhandlungen der k. sächsischen Gesellschaft der Wissenschaften (Leipzig). (Also *Ber.*)
- Abh. schles. Ges.*—Abhandlungen der schlesischen Gesellschaft f. vaterländische cultur (Breslau). (Also *JB.*)
- Abh. schw. pal. Ges.*—Abhandlungen der schweizerischen paläontographischen Gesellschaft (Bâle).

* Those periodicals marked with an asterisk (*) are no longer published.

- Abh. Senck. Ges.*—Abhandlungen herausgegeben von der Senckenbergischen naturforschenden Gesellschaft (Frankfort). (Also *Ber.*)
- Abh. Ver. Brem.*—Abhandlungen herausgegeben vom naturwissenschaftlichen Verein zu Bremen.
- Anh. zool. Mus. Dresden*—Abhandlungen und Berichte des k. zoologischen, etc., Museums in Dresden.
- Act. Ac. Bordeaux*—Actes de l'Académie nationale des sciences belles lettres et Arts de Bordeaux.
- Act. Ac. Córdoba*—Actas de la Academia Nacional de Ciencias de la republica Argentina en Córdoba (Buenos Ayres).
- Act. Lund.*—Acta Universitatis Lundensis (Lund). (Called also *Lunds Universitets Årsskrift*.)
- Act. Soc. Fenn.*—Acta Societatis Scientiarum Fennicæ (Helsingfors).
- Act. Soc. Helv.*—Actes de la Société helvétique des Sciences naturelles (Called also *Verhandl. d. Schweiz. Naturforsch. Gesells.*)
- Act. Soc. Jura.*—Actes de la Société Jurassienne d'émulation.
- Act. Soc. L. Bord.*—Actes de la Société Linnéenne de Bordeaux. (Also *Comptes rendus*.)
- Act. Upsala.*—Acta Universitatis Upsalensis. (Called also *Upsala Universitets Årsskrift*.)
- Aid*—C. O. Waterhouse's Aid to the Identification of Insects (Janson : London).
- Alb. Nat.*—Album der Natuur (Harting : Haarlem).
- Am. Geol.*—The American Geologist (Calvin et alii : Minneapolis).
- Am. J. Sci.*—American Journal of Science and Art. (New Haven.)
- Am. Micr. J.*—American Monthly Microscopical Journal (Hitchcock : Washington).
- Am. Nat.*—American Naturalist (Philadelphia).
- Anat. Anz.*—Anatomische Anzeiger (Bardleben : Jena).
- An. Mus. B. Aires*—Anales del Museo nacional, Buenos Aires.
- An. Mus. Costa Rica*—Anales del Museo Nacional-Republica de Costa Rica (San José).
- An. Mus. La Plata*—Anales del Museo-La Plata (Buenos Ayres).
- An. Mus. nac. Mexico*—Anales del Museo nacional de Mexico.
- An. Soc. Arg.*—Anales de la Sociedad científica Argentina (Buenos Aires).
- An. Soc. Esp.*—Anales de la Sociedad Española de Historia Natural (Madrid).
- Ann. Acc. aspir. Nat.*—Annali dell' Accademia degli aspiranti Naturalisti (Naples).
- Ann. Ent. Belg.*—Annales de la Société Entomologique de Belgique (Brussels).
- Ann. Geol. univ. Paris*—Annuaire géologique universel-Revue de géologie et paléontologie (Carey & Douvillé).
- Ann. Hofmuseum Wien*—Annalen des k. k. naturhistorischen Hofmuseums (von Hauer : Wien).
- Ann. Lomb. Venet.*—Annali di Scienze del regno Lombardo-Venetiano.
- Ann. Mal.*—Annales de Malacologie (Servain : Paris).
- Ann. Micrograph.*—Annales de Micrographie (Miguel : Paris).

- Ann. Mus. Belg.*—Annales du Musée royal d'histoire naturelle Belgique (Brussels).
- Ann. Mus. Genov.*—Annali del Museo civico di Storia Naturale di Genova (Genoa).
- Ann. Mus. Marseille*—Annales du Musée d'Histoire Naturelle de Marseille. Zoologie (Marion : Marseilles).
- Ann. N. H.*—Annals and Magazine of Natural History (London).
- Ann. N. York Ac.*—Annals of the New York Academy of Sciences.
- Ann. Sci. géol.*—Annales des Sciences géologiques (Hébert & Milne-Edwards : Paris).
- Ann. Sci. Nat.*—Annales des Sciences Naturelles (Paris).
- Ann. Soc. Agric. Lyon*—Annales de la Société d'Agriculture, Histoire Naturelle, et Arts utiles de Lyon (Lyons & Paris).
- Ann. Soc. Brux.*—Annales de la Société scientifique de Bruxelles (Brussels).
- Ann. Soc. Char.*—Annales de la Société des Sciences Naturelles de la Charente Inférieure (= Académie de la Rochelle).
- Ann. Soc. Em. Vosges*—Annales de la Société d'Émulation du Département des Vosges (Epinal).
- Ann. Soc. Ent. Fr.*—Annales de la Société entomologique de France (Paris).
- Ann. Soc. géol. Belg.*—Annales de la Société Géologique de Belgique (Liège).
- Ann. Soc. géol. Nord*—Annales de la Société géologique du Nord (Lille). (Also *Memoires*.)
- Ann. Soc. L. Lyon (n.s.)*—Annales de la Société Linnéenne de Lyon. Nouvelle série.
- Ann. Soc. mal. Belg.*—Annales de la Société malacologique de Belgique (Brussels).
- Ann. Soc. Mod.*—Annuario della Società dei Naturalisti di Modena. (See *Atti*.)
- Ann. Univ. Toscane*—Annali delle Università Toscane (Pisa).
- Anz. Ak. Wien*—Anzeiger der mathematisch-naturwissenschaftlichen Classe der K. Akademie der Wissenschaften zu Wien (Vienna).
- Appalachia*—Appalachia : the Journal of the Appalachian Mountain Club. (Boston).
- Arb. Inst. Würzb.*—Arbeiten aus dem zoologisch-zootomischen Institut in Würzburg.
- Arb. z. Inst. Wien*—Arbeiten aus dem zoologischen Institute der Universität Wien (Vienna).
- Arb. z. Inst. Graz*—Arbeiten aus dem zoologischen Institut zu Graz (Leipsic).
- Arch. Anat. Phys.*—Archiv für Anatomie und Physiologie (His, Braune, & Du Bois Reymond : Leipzig).
- Arch. Biol.*—Archives de Biologie (Van Beneden & Van Bambeke : Ghent).
- Arch. f. Anthrop.*—Archiv für Anthropologie : Zeitschrift für Naturgeschichte und Urgeschichte des Menschen (Brunswick).
- Arch. f. math. og Naturv.*—Archiv for Mathematik og Naturvidenskab (Worm-Müller, G. O. Sars, Kristiania).

- Arch. f. Nat.*—Archiv für Naturgeschichte. Neue Folge (Berlin).
Arch. f. Thierheilk.—Archiv für Thierheilkunde.
Arch. ges. Phys.—Archiv für die gesammte Physiologie des Menschen und der Thiere (Pflüger: Bonn).
Arch. Ital. Biol.—Archives Italiennes de Biologie; Revues, Résumés, Reproductions des travaux scientifiques Italiens (Emery & Mosso: Turin).
Arch. mikr. Anat.—Archiv für mikroskopische Anatomie (Bonn).
Arch. Miss. sci.—Archives des Missions scientifiques et littéraires (Paris).
Arch. Mus. Lyon—Archives du Muséum d'Histoire Naturelle de Lyon.
Arch. Mus. R. Jan.—Archivos do Museu Nacional do Rio de Janeiro.
Arch. Mus. Teyl.—Archives du Musée Teyler (Haarlem).
Arch. Nat. Liv.—Archiv für die Naturkunde Liv-, Esth-, und Kurlands (Dorpat).
Arch. naturw. landesforsch. Böhmen—Archiv für naturwissenschaftliche Landesdurchforschung von Böhmen (Prag).
Arch. Néerl.—Archives Néerlandaises des Sciences exactes et naturelles (Boascha: Haarlem).
Arch. Phys.—Archives de Physiologie normale et pathologique (Brown-Séguard: Paris).
Arch. Sci. nat.—Archives des Sciences physiques et naturelles (Geneva).
Arch. slav. Biol.—Archives slaves de Biologie (Mendelssohn-Richet: Paris).
Arch. Ver. Mecklenb.—Archiv des Vereins der Freunde der Naturgeschichte in Mecklenburg.
Arch. Zeeuwsch Genoots. Wetensch.—Archief. Vroegere en latere Mededeelingen voornamelijk in Betrekking tot Zeeland uitgegeven door het Zeeuwsch Genootschap der Wetenschappen (Middelburg).
Arch. Z. expér.—Archives de Zoologie expérimentale et générale (Paris).
Atti Acc. Gioen.—Atti dell' Accademia Gioenia di Scienze naturali (Catania).
Atti Acc. Napoli—Atti della R. Accademia delle scienze fisiche e matematiche.
Atti Acc. Palermo—Atti della R. Accademia di scienze, lettere e belle arti di Palermo (Palermo).
Atti Acc. Pontaniana—Atti dell' Accademia Pontaniana (Naples).
Atti Acc. Pontif. Lincei—Atti dell' Accademia Pontificia de' nuovi Lincei.
Atti Acc. Tor.—Atti della R. Accademia delle Scienze di Torino (Turin).
Atti Ist. Nap.—Atti del R. Istituto d'incoraggiamento alle Scienze Naturali economici e tecnologiche, &c., di Napoli (Naples).
Atti Ist. Venet.—Atti del R. Istituto Veneto di scienze, lettere et arti, &c. (Venice).
Atti (Mem. Rend.) Acc. Rom.—Atti (Memorie: Rendiconti) della R. Accademia dei Lincei (Rome).
Atti (Mem.) Soc. Tosc.—Atti (Memorie) della Società Toscana di Scienze naturali residente in Pisa.
Atti Mus. civico Trieste—Atti del Museo civico di Storia Naturale di Trieste.

- Atti (Bend. Mem.) Soc. Mod. Mem.*—Atti (Memorie : Rendiconti) della Società dei Naturalisti di Modena.
- Atti Soc. Ital.*—Atti della Società Italiana di Scienze naturali (Milan).
- Atti Soc. Ven.-Trent.*—Atti della Società Veneto-Trentina di Scienze naturali residente in Padova (Padua). (Also *Bull.*)
- Atti Univ. Genova*—Atti della R. università di Genova.
- Auk*—The Auk. A Quarterly Journal of Ornithology. (Continuation of the *Bulletin of the Nuttall Ornithological Club.*)
- Ausland*—Das Ausland (Stuttgart).
- Beitr. Morphol. Morphog.*—Beiträge zur Morphologie und Morphogenie (Gerlach : Stuttgart).
- Beitr. Pal. Oesterr.-Ung.* — Beiträge zur Paläontologie Oesterreich-Ungarn's und des Orients (Mojsisovics & Neumayr : Vienna).
- Beitr. Russ. Reiches* (2)—Beiträge zur Kenntniss des Russischen Reiches und der angrenzenden Länder Asiens. Neue Folge (Schrenck & Maximowics : St. Petersburg).
- Ber. Freiburg Ges.*—Berichte der naturforschenden Gesellschaft zu Freiburg (Freiburg, i Br.).
- Bergens Mus. Aaraber.*—Bergens Museum Aarsberetning (Bergen).
- Ber. Ges. Chemn.*—Bericht der naturwissenschaftlichen Gesellschaft zu Chemnitz.
- Ber. Ges. Halle*—Bericht über die Sitzungen der naturforschenden Gesellschaft zu Halle (Also *Abhandl.*)
- Ber. Ges. Hanau = JB. wetter. Ges.*
- Ber. Komm. wiss. Unters. deutsch. Meere*—Bericht der Kommission zur Untersuchung der deutschen Meere.
- Ber. Naturf. Ärzte*—Ämtliche Bericht deutscher Naturforscher und Ärzte.
- Ber. naturf. Ges. Bamberg*—Bericht der naturforschenden Gesellschaft in Bamberg.
- Ber. Naturhist. Mus. Hamburg*—Bericht des Naturhistorischen Museums in Hamburg.
- Ber. natur. Ver. Passau*—Bericht des naturhistorischen Vereins in Passau.
- Ber. naturw. Ver. Regensburg* — Bericht der naturwissenschaftlichen Vereins in Regensburg. (Formerly *CB.*).
- Ber. Oberhess. Ges.*—Bericht der Oberhessischen Gesellschaft für Natur- und Heilkunde (Giessen).
- Ber. Offenb. Ver.*—Bericht über die Thätigkeit des Offenbacher Vereins für Naturkunde (Offenbach-on-the-Main).
- Ber. Primärsch. Böhm.-Leipa*—Bericht der Primärschule in Böhmisches-Leipa.
- Ber. Sächs. Ges.*—Bericht ueber die Verhandlungen der königlichen Sächs. Gesellschaft der Wissenschaft in Leipzig. (Also *Abhandl.*)
- Ber. Senck. Ges.*—Bericht der Senckenbergische naturforschende Gesellschaft im Frankfurt am Main. (Also *Abhandl.*)
- Ber. St. Gall. Gess.*—Bericht über die Thätigkeit der St. Gallischen naturwissenschaftlichen Gesellschaft (St. Gallen).

- Ber. Ver. Augsburg*—Bericht des naturhistorischen Vereins, Augsburg.
Ber. Ver. Cassel—Berichte des Vereins für Naturkunde zu Cassel.
Ber. Ver. Fulda—Bericht des Vereins für Naturkunde in Fulda.
Ber. Ver. Pass.—Bericht der naturwissenschaftlichen Vereins in Passau.
Berl. Monats.—Berliner Monatshefte.
B. E. Z.—Berliner entomologische Zeitschrift.
Bibl. haut. études.—Bibliothèque de l'école des hautes études. Section des Sciences Naturelles (Paris).
Bibl. univ.—Bibliothèque universelle et Revue Suisse (Geneva). (See *Arch. Sci. Nat.*)
Bibl. Zool.—Bibliotheca Zoologica (Leipzig).
Bidr. Finl. Nat.—Bidrag till Kännedom af Finlands Natur och Folk (Helsingfors).
Bih. Sv. Ak. Handl.—Bihang till K. Svenska Vetenskaps-Akademiens Handlingar (Stockholm).
Bijdr. Dierk.—Bijdragen tot de Dierkunde (Amsterdam).
Bijdr. Taal-, &c., Ned. Indië (4)—Bijdragen tot de Taal-, Land-, en Volkenkunde van Nederlandsch Indië. 4de Volgreeks (The Hague).
Biol. Centralbl.—Biologisches Centralblatt (Rosenthal : Erlangen).
Biol. fören.—Biologiska föreningens förhandlingar. Verhandlungen des Biologischen Vereins in Stockholm. (Figerstedt : Stockholm.)
Bol. Ac. Arg.—Boletín de la Academia Nacional de Ciencias de la Republica Argentina (Cordoba).
Bol. Mus. la Plata—Boletín del Museo la Plata (Buenos Ayres).
Boll. Com. Geol.—Bollettino del R. Comitato geologico d'Italia (Roma).
Boll. Mus. Zool. Anat. Comp. Torino—Bollettino dei Musei di Zoologia ed Anatomia comparata della R. Università di Torino.
Boll. Nat.—Bollettino del naturalista Collettore, Allevatore, Coltivatore (Brogi, Siena).
Boll. scient.—Bollettino scientifico (Maggi, Zoja, & Giovanni : Pavia).
Boll. Soc. Adr.—Bollettino della Società Adriatica di Scienze Naturali (Trieste).
Bol. Soc. geogr. Lisboa—Boletim da Sociedade de geographia de Lisboa (Lisbon).
Boll. Soc. Ital. Micr.—Bollettino della Società italiana dei Microscopisti (Acireale).
Boll. Soc. geol. Ital.—Bollettino della Società geologica Italiana (Rome).
Boll. Soc. Nat. Napoli—Bollettino della Società di Naturalisti di Napoli.
Bot. Centralbl.—Botanisches Centralblatt. Referentes-Organ für das Gesamtgebiet der Botanik des In- und Auslandes (Uhlwein & Behrens : Cassel).
Bot. Z.—Botanische Zeitung (Halle).
Brit. Med. J.—British Medical Journal (London).
Bull. Ac. Belg.—Bulletin de l'Académie Royale des Sciences, des lettres, et des Beaux Arts de Belgique (Brussels). (Also *Mem.*)
Bull. Ac. Hippone—Bulletin de l'Académie d'Hippone (Bône).

- Bull. Am. Mus. Nat. Hist.*—Bulletin of the American Museum of Natural History (New York).
- **Bull. Brooklyn Soc.*—Bulletin of the Brooklyn Entomological Society (New York).
- Bull. Brookville Soc.*—Bulletin of the Brookville Society of Natural History (Brookville, Indiana, U.S.A.).
- Bull. Buff. Nat. Club*—Bulletin of the Buffalo Naturalists' Club (Buffalo, N.Y.).
- Bull. Bussey Inst.*—Bulletin of the Bussey Institution (Boston).
- Bull. Chicago Ac. Sci.*—Bulletin of the Chicago Academy of Sciences.
- Bull. Denison Univ.*—Bulletin of the Scientific Laboratories of Denison University (Granville, Ohio).
- Bull. Dep. Agric. Ent.*—U.S. Department of Agriculture. Division of Entomology. Bulletin (Washington).
- Bull. Des Moines Ac.*—Bulletin of the Des Moines Academy of Sciences (Des Moines, Iowa).
- Bull. Ent. Ital.*—Bullettino della Società Entomologia Italiana (Florence).
- Bull. Ess. Inst.*—Bulletin of the Essex Institute (Salem, U.S.A.).
- Bull. hebdom. Ass. sci. Fr.*—Bulletin hebdomadaire de l'Association scientifique de France.
- Bull. Illin. Lab. N. H.*—Bulletin of the Illinois State Laboratory of Natural History. (Normal, Illinois.)
- Bull. Inst. Nat. Genevois*—Bulletin de l'institut nationale Genevois.
- Bull. Minnesota Acad.*—Bulletin of the Minnesota Academy of Natural Sciences.
- Bull. Mosc.*—Bulletin de la Société impériale des Naturalistes de Moscou.
- Bull. Mus. Belg.*—Bulletin du Musée Royal d'Histoire Naturelle de Belgique (Brussels).
- Bull. Mus. C. Z.*—Bulletin of the Museum of Comparative Zoology of Harvard College (Cambridge, U.S.A.).
- Bull. Nat. Hist. Soc. New Brunswick*—Bulletin of the Natural History Society of New Brunswick (St. John's, N.B.).
- Bull. New York Mus. Nat. Hist.*—Bulletin of the New York State Museum of Natural History (Albany).
- Bull. Pétersb.*—Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg.
- Bull. Phil. Soc. Wash.*—Bulletin of the Philosophical Society of Washington.
- Bull. Sci. Fr. Belg.*—Bulletin scientifique de la France et de la Belgique (Giard: Paris).
- Bull. Sedalia Soc.*—Bulletin of the Sedalia Natural History Society (Sedalia, Mo.).
- Bull. Soc. Ac. Brest*—Bulletin de la Société Académique de Brest.
- Bull. Soc. Acclim.*—Bulletin mensuel de la Société nationale d'Acclimatation de Paris (Paris).
- Bull. Soc. Angers*—Bulletin de la Société d'études scientifiques d'Angers (Angers).
- Bull. Soc. Anthropol. Lyon*—Bulletin de la Société d'Anthropologie de Lyon.

- Bull. Soc. Anthrop. Par.*—Bulletin de la Société d'Anthropologie de Paris.
- Bull. Soc. Belg. Micr.*—Bulletin de la Société Belge de Microscopie (Brussels).
- Bull. Soc. Béziers*—Bulletin de la Société d'étude des Sciences naturelles de Béziers. *Comptes rendus des Séances (Béziers).*
- Bull. Soc. Borda-Dax*—Bulletin de la Société de Borda (Dax).
- Bull. Soc. Colm.*—Bulletin de la Société d'Histoire naturelle de Colmar.
- Bull. Soc. Dinan.*—Bulletin de la Société des Naturalistes Dinantais (Dinant).
- Bull. Soc. Ent. Fr.*—Bulletin des séances de la Société entomologique de France (Paris) (See *Ann.*).
- Bull. Soc. Étud. sci. Paris*—Bulletin de la Société d'Études scientifiques de Paris.
- Bull. Soc. Finistère*—Bulletin de la Société d'études scientifiques du Finistère (Morlaix).
- Bull. Soc. Geogr.*—Bulletin de la Société de Géographie (Paris).
- Bull. Soc. géol.*—Bulletin de la Société géologique de France (Paris).
- Bull. Soc. L. Bruxelles*—Bulletin de la Société Royal Linnéenne de Bruxelles.
- Bull. Soc. L. Nord France*—Bulletin de la Société Linnéenne du Nord de la France (Amiens).
- Bull. Soc. L. Norm.*—Bulletin de la Société Linnéenne de Normandie (Caen).
- Bull. Soc. mal. Fr.*—Bulletin de la Société malacologique de France (Paris).
- Bull. Soc. mal. Ital.*—Bullettino della Società malacologica Italiana (Pisa).
- Bull. Soc. Metz*—Bulletin de la Société d'histoire naturelle de Metz (formerly du Département de la Moselle).
- Bull. Soc. Murith.*—Bulletin des travaux de la Société Murithienne du Valais (Neuchâtel).
- Bull. Soc. Nancy*—Bulletin de la Société des Sciences de Nancy (Paris).
- Bull. Soc. Neuchatel*—Bulletin de la Société des sciences naturelles de Neuchatel.
- Bull. Soc. Philom.*—Bulletin de la Société Philomathique de Paris.
- Bull. Soc. Rouen*—Bulletin de la Société des Amis des Sciences Naturelles de Rouen (Rouen).
- Bull. Soc. Sarthe*—Bulletin de la Société d'Agriculture, des Sciences, &c., de la Sarthe (Le Mans).
- Bull. Soc. Saone*—Bulletins de la Société des sciences naturelles de Saone-et-Loire (Chalons sur Saone.) (Also *Mem.*)
- Bull. Soc. Savoie*—Bulletin de la Société d'histoire naturelle de Savoie (Chambéry).
- Bull. Soc. Sci. Phys. Nat. Toulouse*—Bulletin de la Société des sciences physiques et naturelles de Toulouse (Toulouse).
- Bull. Soc. Stat. Isère*—Bulletin de la Société de Statistique des Sciences naturelles, &c., du Département de l'Isère (Grenoble).
- Bull. Soc. Sud-Est*—Bulletin de la Société des Sciences naturelles du Sud-Est (Grenoble).

- Bull. Soc. Toulouse*.—Bulletin de la Société d'Histoire Naturelle de Toulouse.
- Bull. Soc. Vaud*.—Bulletin de la Société Vaudoise des Sciences Naturelles (Lausanne).
- Bull. Soc. Ven. - Trent*.—Bullettino della Società Veneto-Trentina di Scienze naturali (Padua). (Also *Atti*.)
- Bull. Soc. Yonne*.—Bulletin de la Société des Sciences historiques et naturelles de l'Yonne (Auxerre).
- Bull. Soc. Z. Fr.*—Bulletin de la Société Zoologique de France (Paris).
- Bull. U. S. Fish Comm.*—Bulletin of the United States Fish Commission (Washington).
- Bull. U. S. Geol. Surv.*—Bulletin of the United States Geological Survey (Washington).
- Bull. U. S. Nat. Mus.*—Bulletin of the United States National Museum (Washington).
- Bull. Washb. Coll.*—Bulletin of the Washburn College Laboratory of Natural History (Topeka, Kansas).
- Canad. Ent.*—Canadian Entomologist (Saunders : Montreal).
- **Canad. Nat.*—The Canadian Naturalist and Quarterly Journal of Science (Montreal).
- Can. Rec.*—Canadian Record of Science.
- Cardiff Nat. Soc.*—Cardiff Naturalists' Society. Report and Transactions (Cardiff).
- CB. Bakt. Parasit.*—Centralblatt für Bakteriologie und Parasitenkunde.
- CB. Ges. Anthropol.*—Correspondenzblatt der Deutschen Gesellschaft für Anthropologie, &c. (Brunswick).
- CB. Iris*—Correspondenz-Blatt des Entomologischen Vereins Iris zu Dresden.
- CB. med. Wiss.*—Centralblatt für die medicinischen Wissenschaften (Berlin).
- CB. Ver. Begenb.*—(Now *Ber.*).
- CB. Ver. Rheinl.*—Correspondenz-Blatt des naturhistorischen Vereins der preussischen Rheinlande und Westphalens (Bonn). (Also *Verh. & SB*.)
- CB. Ver. Riga*—Correspondenzblatt des Naturforscher-Vereins zu Riga.
- Cellule*—La Cellule. Recueil de Cytologie et d'histologie générale (Carnoy, Gilson, & Denys : Lierre & Gand).
- Chrysanthemum*—The Chrysanthemum : a Monthly Magazine for Japan and the Far East (Yokohama).
- Circ. deutsch. Fisch. Ver.*—Circular des deutschen Fischerei-Vereins (Berlin).
- Cist. Ent.*—Cistula Entomologica (Janson : London).
- **Comm. Acc. Petersb.*—Commentarii Academiæ scientiarum imperialis Petropolitanzæ (St. Petersburg).
- Comm. Ateneo Brescia*—Commentari dell' Ateneo di Brescia.
- Conch. Mittheil.*—Conchologische Mittheilungen (Martens : Cassel).
- **Congr. Sc.*—Congrès Scientifique de France.

- Contr. E. M. Mus. Geol. Princeton*—Contributions from the E. M. Museum of Geology, Princeton College, U.S.A. (Scott & Osborn).
- C.R.*—Comptes rendus des Séances hebdomadaires de l'Académie des Sciences (Paris).
- C.R. Ass. Fr. Sci.*—Compte-rendu de l'Association Française pour l'avancement des Sciences.
- C.R. ent. Belg.*—Comptes rendus des Séances de la Société entomologique de Belgique (Brussels).
- C.R. Soc. Biol.*—Comptes rendus hebdomadaires des Séances et Mémoires de la Société de Biologie (Paris).
- C.R. Soc. L. Bord.*—Comptes Rendus de la Société Linnéenne de Bordeaux. (Also *Actes*.)
- Dan. Selsk. Skr.*—K. Danske Videnskabernes Selskabs Skrifter (Copenhagen).
- Denk. Ak. Wien*—Denkschriften der k. Akademie der Wissenschaften zu Wien (Vienna). (Also *SB.*)
- Deutsche z. Z.*—Deutsche entomologische Zeitschrift (Kratz : Berlin).
- E. Mus. Lund.*—E museo Lundii En Samling Af Afhandlingar (Lütken : Kjobnhavn).
- Ent.*—The Entomologist (London).
- Ent. Am.*—Entomologica Americana (Brooklyn).
- Ent. M. M.*—The Entomologist's Monthly Magazine (London).
- Ent. Med.*—Entomologiske Meddelelser udgivne af Entomologisk Forening ved Fr. Meinert Copenhagen.
- Ent. Nachr.*—Entomologische Nachrichten (Karsch : Berlin).
- Ent. Tidskr.*—Entomologisk Tidskrift, på föranstaltande af Entomologiska Föreningen i Stockholm (Spångberg : Stockholm).
- Ertes. math. természett.*—Ertesítő a matematikai és természettudományi osztályok közlönye (Budapesth).
- Ért. Term. Kor.*—Értekezések a természettudományok köréből, Magyar tudományos Akadémia [Memoirs on Natural Science, Hungarian Academy of Sciences] (Budapesth).
- Ess. Nat.*—See *Tr. Ess. Club*.
- Études d'Ent.*—Études d'Entomologie, Faunes Entomologiques, Descriptions d'Insectes nouveaux ou peu connus (C. Oberthür : Rennes).
- Eckön. Erd. Muz.*—Evkönyvek erdéli muzeumegylet (Kolozsvár = Klausenberg).
- Feuill. Nat.*—Feuille des Jeunes Naturalistes (Dollfus : Paris).
- Field*—The Field (London).
- For. & Str.*—Forest and Stream.
- Förh. Selsk. Chr.*—Förhandlingar i Videnskabs-Selskabet i Christiania.
- Förh. Sk. Naturf.*—Förhandlingar vid de Skandinaviska Naturforskarnes.
- Gard. Chron.*—The Gardener's Chronicle (London).
- Garner*—The Garner and Science Recorders' Journal (Ramsay : Walworth).

- Gef. Welt*.—Die gefiederte Welt: Zeitschrift für Vogelliebhaber, -zucht und -händler (Russ: Berlin).
- Geogr. JB.*—Geographisches Jahrbuch (Gotha).
- Geogr. MT.*—Mitteilungen aus Justus Perthes' geographischer Anstalt (Gotha).
- Geol. Mag.*—Geological Magazine (Woodward: London).
- Giorn. Sci. Palerm.*—Giornale di Scienze naturali ed economiche di Palermo.
- Göteborgs Handl.*—Göteborgs kongl. vetenskaps och vitterhets samhälles Handlingar.
- Helios*.—See *Mon. MT. Ver. Naturw. Frankfurt-a-O.*
- Hist. Berwick Nat. Club*.—History of the Berwickshire Naturalists' Club (Alnwick).
- Hor. Ent. Ross.*—Horæ Societatis Entomologicæ Rossicæ (St. Petersburg).
- Humboldt*.—Humboldt: Monatschrift für die gesammten Naturwissenschaften (Stuttgart).
- Ibis*.—The Ibis (Sclater & Saunders: London).
- Ind. Ann.*.—The Indian Annals and Magazine of Natural Sciences (An Illustrated Monthly) (Murray: Bombay & London).
- Ins. Life*.—Insect Life (Washington).
- Izvest. Mosc. Univ.*.—Izvestiya imperatorskova obshchestva hyubitelei Estestvosnaniya, Antropologi i Etnografii Sostoyashova, pre Moskovskom Universitet.
- J. Ac. Philad.*.—Journal of the Academy of Natural Sciences of Philadelphia.
- J. Agric. Soc. India*.—Journal of the Agricultural and Horticultural Society of India (Calcutta).
- J. Anat. Phys.*.—Journal of Anatomy and Physiology (London).
- J. A. S. B.*.—Journal of the Asiatic Society of Bengal (Calcutta).
- J. A. S. (Bombay)*.—Journal of the Bombay Branch of the Royal Asiatic Society.
- J. A. S. (Ceylon)*.—Journal of the Ceylon Branch of the Royal Asiatic Society.
- J. A. S. (China)*.—Journal of the China Branch of the Royal Asiatic Society.
- JB. Ak. Amst.*.—Jaarboek van de k. Akademie van Wetenschappen (Amsterdam). (Also *Verhandl.*)
- JB. Mijnwezen*.—Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië (Amsterdam).
- JB. geol. Reichsanst.*.—Jahrbuch der k.-k. geologischen Reichsanstalt (Vienna). (Also *Verhandl.*)
- JB. Hamb.*.—Jahrbuch der Hamburgischen wissenschaftlichen Anstalten.
- JB. Karp. Ver.*.—Jahrbuch des ungarischen Karp. Vereins (Kés-märk).
- JB. k. Akad. Erfurt*.—Jahrbücher der Königlichen Akademie gemeinnütziger Wissenschaften zu Erfurt.

- JB. k. preuss. geol. Landesanst.*—Jahrbuch der königlich preussischen geologischen Landesanstalt und Bergakademie zu Berlin.
- JB. mal. Ges.*—Jahrbuch der deutschen malakozoologischen Gesellschaft (Kobelt: Frankfurt).
- JB. Mineral.*—Neues Jahrbuch für Mineralogie, Geologie, und Paläontologie (Leonard & Geinitz: Leipzig).
- JB. Mijncwezen Nederl. Indie*—Jaarboek van het Mijncwezen van Nederl. Oost Indie (Amsterdam).
- JB. Mus. Kärnt.*—Jahrbuch des naturhistorischen Landesmuseums von Kärnten (Klagenfurt).
- JB. nass. Ver.*—Jahrbuch des nassanischen Vereins für Naturkunde (Wiesbaden).
- JB. nat. Ges. Nürnberg* (? continuation of *Abhandl.*).
- JB. Preuss. géol. Landes-Anstalt*—Jahrbuch der Königlich Preussischen geologischen Landes-Anstalt (Berlin).
- JB. sieb. Kurpath. Ver.*—Jahrbuch des siebenbürgischen Karpathen-Vereins (Hermannstadt).
- JB. Tharand. Ges.*—Jahrbuch der Tharanden forstlichen Gesellschaft (Dresden).
- J. Ber. Annab. Ver.*—Jahresbericht des Annaberg-Buchholzer Vereins für Naturkunde (Annaberg).
- J. Ber. Ges. Graub.*—Jahresbericht der naturforschenden Gesellschaft Graubündens (Chur).
- J. Ber. Ges. Hannov.*—Jahresbericht der naturforschenden Gesellschaft in Hannover.
- J. Ber. k. Böhm. Gess. Wiss.*—Jahresbericht der königlich Böhmisches Gesellschaft der Wissenschaften.
- J. Ber. Laurent. Arnsberg*—Jahresbericht über das königlichen Laurentianum in Arnsberg.
- J. Ber. Pollichia*—Jahresbericht der Pollichia eines naturwissenschaftlichen Vereins der Rheinpfalz (Dürkheim a. d. Hart).
- J. Ber. schles. Ges.*—Jahresbericht der schlesischen Gesellschaft für vaterländische Cultur (Breslau). (Also *Abhandl.*)
- J. Ber. schleswig. Ges.*—Jahresbericht der naturwissenschaftlichen Gesellschaft in Schleswig.
- J. Ber. Ver. Braunsch.*—Jahresbericht des Vereins für Naturwissenschaft zu Braunschweig (Brunswick).
- J. Ber. Ver. Elsass-Lothr.*—Jahresbericht des naturwissenschaftlichen Vereins von Elsass-Lothringen (Barr).
- J. Ber. Ver. Frankfurt.*—Jahresbericht des physikalischen Vereins zu Frankfurt-am-Main.
- J. Ber. Ver. Magdeburg*—Jahresbericht und Abhandlungen der naturw. Vereins in Magdeburg.
- J. Ber. Ver. Osnabr.*—Jahresbericht des naturwissenschaftlichen Vereins zu Osnabrück.
- J. Ber. Ver. Zwickau*—Jahresbericht des Vereins für Naturkunde zu Zwickau.
- J. Ber. westf. Ver.*—Jahresbericht der zoologischen Section des westfälischen provincial-Vereins für Wissenschaft und Kunst (Münster).

- J. Ber. wetter. Ges.*—Jahresbericht der wetterauischen Gesellschaft für die gesammte Naturkunde (Hanau).
- J. Ber. Württemb. Ver. Handelsgeogr.*—Jahresbericht des Württembergischen Vereins für Handelsgeographie (Stuttgart).
- J. Bomb. N. H. Soc.*—Journal of the Bombay Natural History Society (Aitken Sterndale : Bombay).
- J. Cincinn. Soc.*—Journal of the Cincinnati Society of Natural History.
- J. Coll. Sci. Japan*—Journal of the College of Science, Imperial University, Japan (Tōkyō).
- J. Comp. Med.*—Journal of Comparative Medicine and Surgery (Conklin & Porter : New York).
- J. de Conch.*—Journal de Conchyliologie (Crosse & Fischer : Paris).
- J. de l'Anat. Phys.*—Journal de l'Anatomie et de la Physiologie (Pouchet : Paris).
- J. Elisha Mitchell Sc. Soc.*—Journal of the Elisha Mitchell Scientific Society (Raleigh, N.C.).
- Jen. Z. Nat.*—Jenaische Zeitschrift für Naturwissenschaft, herausgegeben von der medicinisch-naturwissenschaftlichen Gesellschaft zu Jena.
- J. f. O.*—Journal für Ornithologie (Cabanis : Leipzig).
- JH. Ver. Lüneb.*—Jahreshefte des naturwissenschaftlichen Vereins für das Fürstenthum Lüneburg.
- JH. Ver. Württ.*—Jahreshefte des Vereins für vaterländische Naturkunde in Württemberg (Stuttgart).
- J. L. S.*—Journal of the Linnean Society ; Zoology (London).
- J. Mar. Biol. Ass.*—Journal of the Marine Biological Association (London & Plymouth).
- J. Morph.*—Journal of Morphology (Whitman & Allis : Boston, U.S.A.).
- J. Microgr.*—Journal de Micrographie (Pellétan : Paris).
- J. Micr. & Nat. Sci.*—Journal of Microscopy and Natural Science. (The Journal of the Postal Microscopical Society. A. Allen : London & Bath.)
- J. Northampt. Soc.*—Journal of the Northamptonshire Natural History Society and Field Club.
- J. N. Y. Micr. Soc.*—Journal of the New York Microscopical Society (New York).
- J. of Conch.*—Journal [formerly Quarterly Journal] of Conchology (London).
- Johns Hopk. Univ. Circ.*—Johns Hopkins University Circulars (Baltimore).
- J. Physiol.*—The Journal of Physiology (Foster : Cambridge).
- J. Quek. Club.*—Journal of the Quekett Microscopical Club (London).
- J. R. Agric. Soc.*—Journal of the Royal Agricultural Society (London).
- J. B. Asiat. Soc.*—Journal of the Royal Asiatic Society (London).
- J. B. Inst. Cornwall*—Journal of the Royal Institution of Cornwall (Truro).
- J. R. Micr. Soc.*—Journal of the Royal Microscopical Society (London).
- J. R. Geol. Soc. Ireland*—Journal of the Royal Geological Society of Ireland (London, Dublin, & Edinburgh).

- J. R. Soc. N. S. W.*—Journal and Proceedings of the Royal Society of New South Wales (Sydney).
- J. Soc. Liab.*—Jornal de Sciencias, &c., da Academia de Lisboa (Lisbon).
- J. Soc. Arts*—Journal of the Society of Arts (London).
- J. Trenton Soc.*—Journal of the Trenton Natural History Society (Trenton, N.J.).
- J. Tr. Vict. Inst.*—Journal of the Transactions of the Victoria Institute, or Philosophical Society of Great Britain (London).
- Juurb. Univ. Leiden*—Jaarboek der Rijks-Universiteit te Leiden (Leiden).
- °*Kosmos*—Kosmos: Zeitschrift für einheitliche Weltanschauung auf Grund der Entwicklungslehre.
- Kosmos Lemberg*—Kosmos: Lemberg.
- L'Ab.*—L'Abeille (De Marseul: Paris).
- La Nature*—La Nature, Revue des Sciences, &c. (Tissandier: Paris).
- Le Nat.*—Le Naturaliste (Deyrolle: Paris).
- Leopoldina*—Leopoldina: Amtlichen Organ für der k. Leopold-Carol. deutsch. Acad.
- Lewisham Ass.*—Lewisham and Blackheath Scientific Association.
- Lotos*—Lotos, Jahrbuch für Naturwissenschaft im Auftrage des Vereines 'Lotos' (Prague).
- Lunds Univ. Årsskrift.*—Lunds Universitets Årsskrift. (Also *Act. Lund.*)
- Maandbl. Natuurw.*—Maandblad voor natuurwetenschappen (Amsterdam).
- Madras Journ.*—The Madras Journal of Literature and Science.
- Mal. Bl.*—Malakozoologische Blätter (Clessin: Cassel).
- Math. Nat. Ber. Ung.*—Mathematische und naturwissenschaftliche Berichte aus Ungarn. Mit Unterstützung der Ungarischen Akad. d. Wiss. und der K. Ungar. naturwiss. Ges. herausgegeben von Baron R. Eötvös, &c. (Fröhlich: Buda-Pest).
- Math. naturw. Mitt.*—Mathematisch-naturwissenschaftliche Mittheilungen Tübingen (ed. Böklen).
- Math. term. Értes.*—Mathematikai és természettudományi Értesítő (Gyula: Buda Pesth).
- Matk. term. köz.*—Mathematikai és természettudományi közlemények (Buda-Pest).
- Med. World.*—Medical World.
- Med. Soc. Fenn.*—Meddelanden af Societas pro Fauna et Flora Fennica (Helsingfors).
- Mél. biol.*—Mélanges biologiques tirés du Bulletin de l'Académie Impériale des Sciences de St. Petersburg.
- Mém. Ac. Amiens*—Mémoires de l'Académie des sciences, des lettres, et des arts d'Amiens (Amiens).
- Mém. Ac. Aix*—Mémoires de l'Académie des Sciences, Agriculture, Arts, et Belles-lettres d'Aix (Aix en Provence).
- Mem. Ac. Barcel.*—Memorias de la real Academia de Ciencias de Barcelona.

- Mém. Ac. Belg.*—Mémoires de l'Académie royal des Sciences, des lettres, et des beaux-arts de Belgique (Brussels). (Also *Bull.*)
- Mem. Acc. Bologn.*—Memorie della R. Accademia delle Scienze dell'Istituto di Bologna.
- Mém. Ac. Caen.*—Mémoires de l'Académie nationale des Sciences, Arts, et belles-lettres de Caen. (Formerly *Bulletin.*)
- Mém. Ac. Dijon.*—Mémoires de l'Académie des Sciences, Arts, et belles-lettres de Dijon.
- Mém. Ac. Lyon.*—Mémoires de l'Académie des Sciences, Belles-lettres et Arts de Lyon (Lyon).
- Mem. Ac. Madrid.*—Memorias de la real Academia de ciencias exactas físicas, y naturales de Madrid (Madrid).
- Mém. Ac. Metz.*—Mémoires de l'Académie de Metz.
- Mem. Acc. Mod.*—Memorie delle Regia Accademia di Scienze, Lettere, ed Arti in Modena.
- Mém. Ac. Montp.*—Mémoires de la Section des Sciences de l'Académie des Sciences et lettres de Montpellier.
- Mém. Ac. Pétersb. (7).*—Mémoires de l'Académie impériale des Sciences de St. Pétersbourg. 7me série.
- Mém. Ac. Rouen.*—Précis analytique des travaux de l'Académie des sciences, belles-lettres, et arts de Rouen (Rouen).
- Mém. Ac. Savoie.*—Mémoires de l'Académie des Sciences, Belles-lettres, et Arts de Savoie (Chambéry). (Also *Comptes Rendus.*)
- Mém. Ac. Sci.*—Mémoires de l'Académie des Sciences (Paris).
- Mem. Ac. Sci. Lisboa.*—Memorias da Academia real das Sciencias de Lisboa.
- Mem. Acc. Tor.*—Memorie della R. Accademia delle Scienze di Torino (Turin).
- Mém. Ac. Toulouse.*—Mémoires de l'Académie des Sciences, &c., de Toulouse.
- Mém. Ac. Vaucluse.*—Mémoires de l'Académie de Vaucluse (Avignon).
- Mem. Am. Ac.*—Memoirs of the American Academy of Arts and Sciences (Boston).
- Mem. Boll. Soc. geogr. Ital.*—Memorie (Bollettino) della Società geografica Italiana (Rome).
- Mem. Bost. Soc.*—Memoirs of the Boston Society of Natural History.
- Mem. California Acad.*—Memoirs of the California Academy.
- Mém. Cour. Ac. Belg.* 4to.—Mémoires Couronnés et Mémoires des Savants Étrangers publiés par l'Académie Royale des Sciences, des Lettres et des Beaux Arts de Belgique.
- Mém. Cour. Ac. Belg.* 8vo.—*Ibid.* 8vo.
- Mém. hist. nat. Empire Chinois.*—Mémoires concernant l'histoire naturelle de l'Empire Chinois par des pères de la compagnie de Jésus (Shanghai).
- Mém. Inst. Génév.*—Mémoires de l'Institut national Genévois (Geneva).
- Mem. Ist. Lomb.*—Memorie del R. Istituto Lombardo di scienze (Milan).
- Mem. Ist. Venet.*—Memorie del R. Istituto Veneto di Scienze, &c. (Venice).
- Mém. Liège.*—Mémoires de la Société Royale des Sciences de Liège.
- Mem. Mus. C. Z.*—Memoirs of the Museum of Comparative Zoology at Harvard College (Cambridge, U.S.A.).

- Mem. Nat. Ac. Sci.*—Memoirs of the National Academy of Sciences (Washington).
- Mém.-prés. Ac. Sci.*—Mémoires présentées par divers savants à l'Académie des Sciences de l'institut de France (Paris).
- Mém. Soc. Abbeville*—Mémoires de la Société d'émulation d'Abbeville.
- Mém. Soc. Angers*—Mémoires de la Société nationale d'agriculture, sciences, et arts d'Angers (Angers).
- Mém. Soc. Aube*—Mémoires de la Société Académique d'agriculture, des sciences, arts, et belles-lettres du département de l'Aube (Troyes & Paris).
- Mém. Soc. Biol.*—(See *C.R.*)
- Mém. Soc. Bord.*—Mémoires de la Société des Sciences physiques et naturelles de Bordeaux.
- Mém. Soc. Cannes*—Mémoires de la Société des Sciences naturelles et historiques des lettres et des Beaux-Arts de Cannes et de l'Arrondissement de Grasse (Cannes).
- Mém. Soc. Cherb.*—Mémoires de la Société nationale des Sciences naturelles et mathématiques de Cherbourg.
- Mém. Soc. ém. Doubs.*—Mémoires de la Société d'émulation du Doubs (Besançon).
- Mém. Soc. Géol.*—Mémoires de la Société Géologique de France (Paris)
- Mém. Soc. Hainault*—Mémoires et publications de la Société des Sciences, des Arts, et des Lettres du Hainault (Mons).
- Mém. Soc. Hist. Nat.*—Mémoires de la Société des Sciences naturelles de France.
- Mem. Soc. Ital. Sci. Nat.*—Memorie della Società Italiana di scienze naturali (Milan).
- Mém. Soc. Lille*—Mémoires de la Société de l'agriculture et des arts de Lille.
- Mém. Soc. L. N. Fr.*—Mémoires de la Société Linnéenne du Nord de la France (Amiens).
- Mém. Soc. Maine et Loire*—Mémoires de la Société Académique de Maine et Loire (Angers).
- Mem. Soc. Manch.*—Memoirs of the Manchester Literary and Philosophical Society (London).
- Mém. Soc. Neuchatel*—Mémoires de la Société des sciences naturelles de Neuchatel.
- Mém. Soc. Oise*—Mémoires de la Société Académique d'archéolo du sciences et arts du département de l'Oise.
- Mém. Soc. Phys. Génér.*—Mémoires de la Société de Physique et d'Histoire Naturelle de Genève.
- Mém. Soc. Saône*—Mémoires de la Société des sciences naturelles de Saône-et-Loire (Chalon-sur-Saône). (Also *Bulletin.*)
- Mém. Soc. Seine & Oise*—Mémoires de la Société des Sciences naturelles et médicales de Seine-et-Oise (Versailles).
- Mém. Soc. Zool.*—Mémoires de la Société Zoologique de France (Paris).
- Mem. Univ. Tokio*—Memoirs of the Science Department, Tokio Daigaku (University of Tokio).

- Midden-Sumatra** — Midden-Sumatra. Reizen en orderzoekingen des Sumatra-Expedite nitgerust door het Aardrijkskundig Genootschap, 1877-1879, beschreven door de Leden der Expedite onder Toezicht van Prof. P. J. Veth. Part iv. Natuurlijke Historie (Brill : 1884, 8vo).
- Mid. Nat.**—The Midland Naturalist (Badger & Harrison : London & Birmingham).
- Mon. MT. Ver. Frankfurt-a.-O.** — Monatliche Mittheilungen aus dem Gesamtgebiete der Naturwissenschaften. Organ des naturwissenschaftlichen Vereins des Regierung-Bezirktes, Frankfurt-an-der-Oder (Huth : Berlin). (Now *Helios*.)
- Month. Int. J. Anat. Hist.**—Monthly International Journal of Anatomy and Histology (Paris, Leipsic, London).
- Month. P. Am. Ent. Soc.**—Proceedings of the Monthly Meetings of the Entomological Section of the Academy of Natural Sciences, Philadelphia (issued with *Tr. Am. Ent. Soc.*).
- Morph. JB.**—Morphologisches Jahrbuch : eine Zeitschrift für Anatomie und Entwicklungsgeschichte (Gegenbauer : Leipzig).
- MB. Akad. Berlin**—(See *SB.*, &c.)
- MT. anthrop. Ges. Wien**—Mittheilungen der anthropologischen Gesellschaft in Wien (Vienna).
- MT. deutsch. Fisch. Ver.**—
- MT. embr. Inst. Wien (n.s.)**—Mittheilungen aus dem embryologischen Institute der k. k. Universität in Wien. New series (Schenck : Vienna).
- MT. Ges. Bern**—Mittheilungen der naturforschenden Gesellschaft in Bern.
- MT. Ges. Ostasien's**—Mittheilungen der deutschen Gesellschaft für Natur- und Völkerkunde Ostasien's (Yokohama).
- MT. min. geol. Mus. Dresden**—Mittheilungen aus dem kön. mineralogisch-geologischen und prähistorischen Museum in Dresden.
- MT. Münch. ent. Ver.**—Mittheilungen der Münchener entomologischen Vereins.
- MT. orn. Ver. Wien**—Mittheilungen des ornithologischen Vereins in Wien (Vienna).
- MT. Osterlande**—Mittheilungen aus dem Osterlande (Altenberg).
- MT. schw. ent. Ges.**—Mittheilungen der schweizerischen entomologischen Gesellschaft (Schaffhausen).
- MT. Thurgau. Ges.**—Mittheilungen der Thurgauischen naturforschenden Gesellschaft (Frauenfeld).
- MT. ung. geol. Anst.**—Mittheilungen aus dem Jahrbuche der kön. ungarischen geologischen Anstalt (Buda-Pest).
- MT. Ver. Steiern.**—Mittheilungen des naturwissenschaftlichen Vereine für Steiermark (Graz).
- MT. Vorpomm.**—Mittheilungen aus dem naturwissenschaftlichen Vereine von Neu-Vorpommern und Rügen (Griefswald).
- MT. z. Stat. Neap.**—Mittheilungen aus der zoologischen Station in Neapel (Leipzig).
- N. Act. Ups.**—Nova Acta R. Societatis Scientiarum Upsaliensis (Upsala).

- N. Acta Ac. L.-C. Nat. cur.*—Nova Acta Academiæ Cæs. Leopoldino-Carolinæ Germaniæ Naturæ curiosorum (Leipzig). (Also *Verhandlungen der k. Leop. Carol. deutschen Acad. d. Naturf.*)
- **N. Ann. sci. nat. Bologna*—Nuovi annali della scienze naturali Bologna.
- N. Arch. Mus.*—Nouvelles Archives du Muséum d'Histoire Naturelle (Paris).
- N. Denk. schw. Ges.*—Neue Denkschriften der allgemeinen schweizerischen Gesellschaft für die gesammten Naturwissenschaften. (Also *Nouveaux Mém. de la Soc. Helv. des Sciences Naturelles.*)
- N. Mém. Soc. Helv.*—Nouveaux Mémoires de la Société Helvétique des Sciences naturelles (Lausanne).
- N. Mém. Soc. Imp. Moscou*—Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou.
- N. Saggi Acad. Padova*—Nuovi saggi della R. Accademia di scienze lettere ad arti in Padova.
- °*N. Z. J. Sci.*—The New Zealand Journal of Science (Dunedin).
- Nachr. Ges. Götting.*—Nachrichten von der k. Gesellschaft der Wissenschaften und der Georg Auguste Universität zu Göttingen.
- Nachr. mal. Ges.*—Nachrichtsblatt der deutschen malakozoologischen Gesellschaft (Frankfort).
- Nat. Canad.*—Le Naturaliste Canadien (Provancher: Cap Rouge, Quebec).
- Nat. Hist. J.*—The Natural History Journal and School Reporter (London and York).
- Nat. Hist. N.*—Natural History Notes (Rowbotham: London).
- Nat.-Hist. Tr. North Durham*—Natural-History Transactions of North-umberland, Durham, and Newcastle-on-Tyne (London & Newcastle).
- Nat. Mex.*—La Naturaleza (Mexico).
- Nat. Sicil.*—Il Naturalista Siciliano: Giornale di Scienze Naturali (Ragusa: Palermo).
- °*Nat. Tids.*—Naturhistorik Tidsskrift (Schjødte: Copenhagen).
- Nat. Tijdschr. Nederl. Ind.*—Natuurkundig Tijdschrift voor Nederlandsche Indie (Batavia).
- Nat. Ver. Haarlem*—Natuurkundige Verhandelingen van de Hollandsche Maatschappij der Wetenschappen te Haarlem (Haarlem).
- Nat. Ver. Utrecht*—Natuurkundige Verhandelingen Provinciaal Utrechtsch genootschap van Kunsten en Wetenschappen (Utrecht).
- Natur*—Die Natur: Zeitung zur Verbreitung naturwissenschaftlichen Kenntnisse und Naturanschauung für Leser alle Stände. Organ des deutschen Humboldt-Verein (Müller: Halle).
- Naturalist*—The Naturalist: Journal of the Yorkshire Naturalists' Union, &c. A Monthly Journal of Natural History for North of England (Roebuck & Clarke: London & Leeds).
- Nature*—Nature (London).
- Naturforscher*—Naturforscher; Wochenblatt zur Verbreitung der Fortschritte in den Naturwissenschaften (Sklarek: Berlin).
- Naut.*—The Nautilus (Pilsbry & Averell: Philadelphia).
- Nor. Selak. Skr.*—K. Norske Videnskabers Selskabs Skrifter (Thronhejm).

Notes Leyd. Mus.—Notes from the Royal Zoological Museum of the Netherlands at Leyden (Jentink).

Notisbl. Ver. Erdk. Darmstadt—Notizblatt des Vereins für Erdkunde zu Darmstadt.

Nouv. et faits—Nouvelles et faits divers (De Marsoul : Paris).

Nunq. Ot.—Nunquam otiosus (Schaufuss : Dresden).

Nyt. Mag. Naturr.—Nyt Magazin for Naturvidenskaberne (Christiania).

Öfvs. Ak. Förh.—Öfversigt af k. Vetenskaps Akademiens Förhandlingar (Stockholm).

Öfvs. Finska Förh.—Öfversigt af Finska Vetenskaps Societetens Förhandlingar (Helsingfors).

Onderz. Phys. Lab. Utrecht—Onderzoekingen gedaan en het physiologisch Laboratorium der Utrechtsche Hoogeschool.

Orn. & Ool.—Ornithologist & Oologist (Pawtucket, R. I.).

Ornis—Ornis : Internationale Zeitschrift für die gesammte Ornithologie (Blasius & Hayek : Vienna).

Orvos-termesz. Értesítő.—Orvos-termeszettudományi Értesítő (Kolozsvár = Klausenberg).

Oeers. Dan. Selsk.—Oversigt over det k. Danske Videnskabernes Selskabs Forhandlingar (Copenhagen).

P. Ac. Philad.—Proceedings of the Academy of Natural Sciences of Philadelphia.

P. Am. Ac.—Proceedings of the American Academy of Arts and Sciences (Boston).

P. Am. Ass.—Proceedings of the American Association for the Advancement of Science.

P. Am. Micr. Soc.—Proceedings of the American Society for Microscopists.

P. Am. Phil. Soc.—Proceedings of the American Philosophical Society (Philadelphia).

P. A. S. B.—Proceedings of the Asiatic Society of Bengal (Calcutta).

P. Bath. N. H. Soc.—Proceedings of the Bath Natural History and Antiquarian Field Club.

P. Belf. Soc.—(See Report.)

P. Biol. Soc. Washington—Proceedings of the Biological Society of Washington.

P. Birmingham. Phil. Soc.—Proceedings of the Birmingham Philosophical Society.

P. Birmingham. Soc.—(See Report.)

P. Bost. Soc.—Proceedings of the Boston Society of Natural History (Boston, U.S.A.).

P. Bristol Soc.—Proceedings of the Bristol Naturalists' Society.

P. Cambr. Phil. Soc.—Proceedings of the Philosophical Society, Cambridge.

P. Canad. Inst.—Proceedings of the Canadian Institute (Toronto).

P. Chest. Soc.—Proceedings of the Chester Society of Natural Science.

- P. Colorado Soc.*—Proceedings of the Colorado Scientific Society (Denver).
- P. Cottesw. Nat. F. C.*—Proceedings of the Cotteswold Naturalists' Field Club (Gloucester.)
- P. Davenport Ac.*—Proceedings of the Davenport Academy of Natural Sciences (Davenport, Iowa).
- P. Dorset Field Club*—Proceedings of the Dorset Natural History and Antiquarian Field Club (Sherborne).
- P. E. Soc.*—Proceedings of the Entomological Society of London.
- P. Folkestone Soc.*—Proceedings of the Folkestone Natural History Society.
- P. Geol. Ass.*—Proceedings of the Geologists' Association (London).
- P. Holmesdale Nat. Hist. Club*—Proceedings of the Holmesdale Natural History Club (London).
- P. Linn. Soc. N.S.W.*—Proceedings of the Linnean Society of New South Wales (Sydney).
- P. Liverp. Biol. Soc.*—Proceedings of the Liverpool Biological Society.
- P. Liverp. Field Club*—Proceedings of the Liverpool Naturalists' Field Club.
- P. Liverp. Soc.*—Proceedings of the Literary and Philosophical Society of Liverpool.
- P. Nebraska Ass.*—Proceedings of the Nebraska Association for the Advancement of Science.
- P. Newport Nat. Hist. Soc.*—Proceedings of the Newport Natural History Society.
- P. N. H. Soc. Glasg.*—Proceedings of the Natural History Society of Glasgow.
- P. N.-Scot. Inst.*—Proceedings and Transactions of the Nova-Scotian Institute of Natural Science (Halifax, N.-S.).
- P. Phil. Soc. Glasg.*—Proceedings of the Philosophical Society of Glasgow.
- P. Phys. Soc. Edinb.*—Proceedings of the Royal Physical Society of Edinburgh.
- P. R. Geogr. Soc.*—Proceedings of the Royal Geographical Society (London).
- P. R. Inst.*—Proceedings of the Royal Institution of Great Britain (London).
- P. R. Irish Ac.*—Proceedings of the Royal Irish Academy (Dublin).
- P. R. Soc.*—Proceedings of the Royal Society (London).
- P. R. Soc. Edinb.*—Proceedings of the Royal Society of Edinburgh.
- P. R. Soc. Queensl.*—Proceedings of the Royal Society of Queensland (Brisbane).
- P. R. Soc. Tasnm.*—Papers and Proceedings and Reports of the Royal Society of Tasmania (Hobarton).
- P. R. Soc. Vict.*—Proceedings of the Royal Society of Victoria (Melbourne).
- P. Soc. Manch.*—(See *Mem.*)
- P. Somerset. Soc.*—Proceedings of the Somersetshire Archæological and Natural History Society. New series (Taunton).

- P. Tr. Croydon Nat. Hist. Club*—Proceedings and Transactions of the Croydon Microscopical and Natural History Club (Croydon).
- P. U. S. Nat. Mus.*—Proceedings of the United States National Museum (Washington).
- P.-v. Soc. Mal. Belg.*—Procès-verbaux des séances de la Société malacologique de Belgique (Brussels).
- P.-v. Soc. Tosc.*—Processi verbali della Società Toscana di Scienze naturali (Pisa).
- P. Warwick. Club*—Proceedings of the Warwickshire Naturalists' and Archaeologists' Field Club (Warwick).
- P. Z. S.*—Proceedings of the Zoological Society (London).
- Pul. Abh.*—Paläontologische Abhandlungen (Dames & Kayser; Berlin).
- Pulzontogr.*—Paläontographica: Beiträge zur Naturgeschichte der Vorwelt (Cassel).
- Pal. Ind.*—Paläontologia Indica. (4to) Memoirs of the Geological Survey of India (Calcutta).
- Pul. Soc.*—Monographs of the Palaeontological Society.
- Pam. Akad. umiej. wydz. przyr. Krakau*—Pamiętnik Akademii Umiejętności w Krakowie. Wydział matem. przyr (Cracow).
- Pam. Fizjogr.*—Pamiętnik Fizjograficzny (Warsaw).
- Papilio*—Papilio: the Organ of the New York Entomological Club, devoted exclusively to Lepidoptera (H. Edwards: New York).
- Phil. Tr.*—Philosophical Transactions of the Royal Society (London).
- Preisschr. Jablonovsk. Gesells. Leipsig*—Preisschriften gekrönt und herausgegeben von der fürstlich Jablonovski'schen Gesellschaft zu Leipsig.
- Proc. Cal. Ac. Sci.*—Proceedings of the Californian Academy of Sciences (San Francisco).
- Prodr. Zool. Vict.*—Prodromus of the Zoology of Victoria (McCoy: Melbourne).
- Protok. obsch. estest. Kavan*—Protokol zasiedanie obschestva estestvoispetateleyi pre imperatorskom Kazanskom Universitetye.
- Prot. Soc. Nouv. Russ.*—Protocol de la Société des Naturalistes de la Nouvelle Russie (Odessa).
- Psyche*—Psyche, a Journal of Entomology. Published by the Cambridge Entomological Club (Cambridge, Mass., U.S.A.).
- Publ. Inst. Luxemb.*—Publications de l'Institut royal grand-ducal de Luxembourg.
- Q. J. Geol. Soc.*—Quarterly Journal of the Geological Society (London).
- Q. J. Micr. Soc.*—Quarterly Journal of Microscopical Science (Lancker et alii: London).
- Rad jugoslav. akad.*—Rad jugoslavenske akademije znanosti i umjetnosti (Zagreb). [Transactions of the South Slav Academy of Science and Art.]
- Rev. Geol. Surr. Ind.*—Records of the Geological Survey of India (Calcutta).
- Rec. Z. Suisse*—Recueil Zoologique Suisse (Fol: Geneva & Bâle).

- Rend. Acc. Nap.*—Rendiconto dell' Accademia delle Scienze fisiche e matematiche (Sezione della Società reale di Napoli).
- Rend. Ist. Bologna*—Rendiconti delle sessioni della R. Accademia delle scienze dell' Istituto di Bologna.
- Rend. Ist. Lombardo*—Rendiconti del Real Istituto Lombardo di Scienze e letteri (Milan).
- Rep. Belfast Field Club*—Annual Report and Proceedings of the Belfast Naturalists' Field Club.
- °Rep. Birm. N. H. Soc.*—Report [and Transactions] of the Birmingham Natural History and Microscopical Society. (Now in *Mid. Nat.*)
- Rep. Brighton Soc.*—Annual Report and Abstract of Proceedings of the Brighton and Sussex Natural History Society (Brighton).
- Rep. Brit. Ass.*—Report of the British Association for the Advancement of Science.
- Rep. Cornell Univ. Stat.*—Report of the Department of Entomology of the Cornell University Experiment Station (Comstock: Ithaca, N.Y.).
- Rep. Cornwall Polytechn.*—Reports of the Royal Polytechnical Society of Cornwall.
- Rep. Dep. Agric. & Rep. Ent.*—Report of the Entomologist. From the Annual Report of the Department of Agriculture (Washington).
- Rep. Dulwich Col. Soc.*—Annual Report of the Dulwich College Science Society (Dulwich).
- Rep. E. Soc. Ont.*—Report of the Entomological Society of the Province of Ontario.
- Rep. Fish. Scotl.*—Annual Report of the Fishery Board for Scotland (London, Edinburgh, & Dublin).
- Rep. Geol. Surv. Canada*—Report of the Geological and Natural History Survey and Museum of Canada (Montreal).
- Rep. Ins. Illin.*—Annual Report of the Noxious and Beneficial Insects of the State of Illinois (Springfield).
- Rep. Ins. N. York*—Annual Report of the Injurious and other Insects of New York (Lintner: Albany).
- Rep. Leicest. Soc.*—(See *Tr.*)
- Rep. Marl. Coll. Soc.*—Report of the Marlborough College Natural History Society.
- Rep. N. Stafford F. Club*—Report of the North Stafford Field Club.
- Rep. N. Y. Mus.*—Annual Report of the New York State Museum of Natural History (Albany).
- Rep. & P. Belfast N. H. Soc.*—Report and Proceedings of the Belfast Natural History and Philosophical Society.
- Rep. Penzance Soc.*—Report and Transactions of the Penzance Natural History and Antiquarian Society.
- Rep. Plym. Inst.*—Annual Report and Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society (Plymouth).
- Rep. Rugby Soc.*—Report of the Rugby School Natural History Society.
- Rep. Tr. Devon Ass.*—Report and Transactions of the Devonshire Association for the Advancement of Science, &c. (Plymouth).

- Rep. U. S. Ent. Comm.*—Report of the United States Entomological Commission (Washington).
- Rep. U. S. Fish. Comm.*—Report of the Commissioner, United States Commission of Fish and Fisheries (Washington).
- Rep. U. S. Geol. Surv.*—Annual Report of the United States Geological Survey (Washington).
- Rep. Wellington Soc.*—Report of the Wellington College Natural Science Society (Wellington Coll.).
- Rep. Winchester Soc.*—Report of the Winchester College Natural History Society (Winchester).
- Rep. W. Kent Soc.*—Papers and Reports, &c., of the West Kent Natural History, Microscopical, and Photographic Society (Greenwich).
- Rep. Yorks. Phil. Soc.*—Report of the Council of the Yorkshire Philosophical Society.
- Rev. Biol.*—Revue biologique du Nord de la France (Barrois, Hallez, Moniez : Lille).
- Rev. Cien. Madrid*—Revista de los progresos de las Ciencias exactas, físicas, y naturales (Madrid).
- Rev. Cient. Univ. Venezuela*—Revista científica mensual de la Universidad de Venezuela (Caracas).
- Rev. d'Ent.*—Revue d'Entomologie, publié par la Société Française d'Entomologie (Fauvel : Caen).
- Rev. mens. Ent.*—Revue mensuelle d'Entomologie pure et appliquée (Doukhtouroff : St. Petersburg).
- Rev. Montp.*—Revue des Sciences naturelles (Montpellier).
- Rev. Quæst. sci.*—Revue des Questions scientifiques (Brussels).
- Rev. Sci.*—Revue Scientifique de la France et de l'Étranger (Paris).
- Rev. Sci. Bourb.*—Revue Scientifique du Bourbonnais et du centre de la France (Olivier : Moulins).
- Rev. Sci. Nat.*—Revue des Sciences Naturelles (Dubreuil : Paris).
- Rev. Soc. Porto*—Revista da Societa de Instrução de Porto (Oporto).
- Rev. Tierheilkunde*—Revue für Tierheilkunde und Tierzucht (Vienna).
- Rev. Tr. Sci.*—Revue des Travaux Scientifiques (Paris).
- Rev. Zool.*—Revue Zoologique.
- Riv. Ital. Sci. Nat.*—(Now *Boll. Soc. Nat. Napoli*.)
- Rochester Nat.*—The Rochester Naturalist (Rochester).
- Rov. Lapok*—Rovartani Lapok [Entomological Leaves] (G. Horváth : Budapest).
- Rozprawy Wydz. matem.-przycz. Akad. Umiej.*—Rozprawy i Sprawozdania z posiedzeu Wydzialu matem.-przycz. Akademii Umiejtnosci. [Transactions of the Academy of Sciences, Krakau.]

S. E. Z.—Stettiner entomologische Zeitung (Dohrn : Stettin).

Samm. Geol. Mus. Leid.—Sammlungen des Geologischen Reichsmuseums in Leiden.

SB. Ak. Berlin—Sitzungsberichte der königlich preussischen Akademie der Wissenschaften zu Berlin (formerly Bericht and Monatsbericht). (Also *Abhandl.*)

- SB. Ak. Wien*—Sitzungsberichte der mathematische-naturwissenschaftlichen Classe der k. Akademie der Wissenschaften (Vienna). (Also *Denkschriften*.)
- SB. bayer. Ak.*—Sitzungsberichte der mathematisch-physikalischen Classe der k. bayerischen Akademie der Wissenschaften (Munich). (Also *Abhandl.*)
- SB. böhm. Ges.*—Sitzungsberichte der k. böhmischen Gesellschaft der Wissenschaften (Prague). (Also *Abhandl.*)
- SB. Ges. Dorp.*—Sitzungsberichte der Naturforscher Gesellschaft bei der Universität Dorpat (Dragendorff : Dorpat).
- SB. Ges. Isis*—Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' (Dresden). (Also *Abhandl.*)
- SB. Ges. Königsb.*—Sitzungsberichte der k. physikalisch-ökonomischen Gesellschaft in Preussen (Königsberg). (See *Schr. Ges. Königsb.*)
- SB. Ges. Leipzig*—Sitzungsberichte der naturforschenden Gesellschaft zu Leipzig.
- SB. Ges. Marb.*—Sitzungsberichte der Gesellschaft zur Beförderung der gesammten Naturwissenschaften zu Marburg.
- SB. Ges. Morph.*—Sitzungsberichte der Gesellschaft für Morphologie und Physiologie in München (Munich).
- SB. Ges. Würzb.*—Sitzungsberichte der physikalisch-medicinischen Gesellschaft zu Würzburg. (Also *Verh.*)
- SB. Jen. Ges.*—Sitzungsberichte der Jenaischen gesellschaft für medicin- und naturwissenschaftlichen Gesellschaft in Jena (Jena).
- SB. nat. Fr.*—Sitzungsberichte der Gesellschaft naturforschender Freunde zu Berlin.
- SB. niederrhein. Ges.*—Sitzungsberichte der niederrheinischen Gesellschaft für Natur- und Heilkunde (Bonn). (Published with *Verh. & CB. Ver. Rheinl.*)
- SB. Soc. Erlangen*—Sitzungsberichte der Physikalisch-medicinischen Societät zu Erlangen.
- SB. z.-b. Wien*—Sitzungsberichte der zoologisch-botanischen Gesellschaft in Wien (Vienna). (Also *Verh.*)
- Schr. Ges. Danz.*—Neueste Schriften der naturforschenden Gesellschaft zu Danzig (Danzig).
- Schr. Ges. Königsb.*—Schriften der physikalisch-ökonomischen Gesellschaft zu Königsberg in Preussen.
- Schr. gesamt. Naturw. Marburg*—Schriften der Gesellschaft zur Beförderung der gesammten Naturwissenschaften zu Marburg.
- Schr. Nat. Ver. Schleswig*—Schriften des naturwissenschaftlichen Vereins für Schleswig-Holstein (Kiel).
- Schr. Ver. Harzes*—Schriften des naturwissenschaftlichen Vereins des Harzes in Wernigerode.
- Schr. Univ. Kiel*—Schriften der Universität zu Kiel.
- Science*—Science (Dall : Cambridge, Mass.).
- Sci. Goss.*—Science Gossip (Taylor : London).
- Sci. Mem.*—Scientific Memoirs by Medical Officers of the Army of India (Simpson : Calcutta).
- Science Obs.*—Science Observer (Boston Scientific Society, U.S.A.).

- Sci. P. R. Dubl. Soc.*—Scientific Proceedings of the Royal Dublin Society.
Sci. Tr. R. Dublin Soc. (2)—The Scientific Transactions of the Royal Dublin Society. Second Series.
Scot. Nat.—The Scottish Naturalist (Trail : Perth).
Sem. Médic.—La semaine médicale.
Smiths. Contrib. Knowledge—Contributions to Knowledge by the Smithsonian Institution (Washington).
Smiths. Misc. Coll.—Smithsonian Miscellaneous Collections (Washington).
Soc. Ent.—Societas Entomologica.
Soc. Agric. Pyrén.-orient.—Société Agricole Scientifique et Littéraire des Pyrénées-orientales (Perpignan).
Soc. Sci. Vitry—Société des Sciences et Arts de Vitry la François (Arcis sur Aube).
Sprawozd. Kom. fizyogr.—Sprawozdanie Komisji fizyograficznej, &c. (Cracow).
Stud. Biol. Lab. J. Hopkins Univ.—Studies at the Biological Laboratory of the Johns Hopkins University (Baltimore).
^o*Stud. Micr. Sci.*—Studies in Microscopical Science (Cole : London).
Sv. Ak. Handl.—K. Svenska Vetenskaps-Akademiens Handlingar (Stockholm).
- Tag. Deut. Nat. Vers.*—Tageblatt der Versammlung deutscher Naturforscher und Aertzte.
Taprobanian—The Taprobanian (Nevill : Bombay).
Tijdschr. Ent.—Tijdschrift voor Entomologie (The Hague).
Tijdschr. Nederl. Dierk. Ver. (2)—Tijdschrift van de Nederlandsche Dierkundige Vereeniging (The Hague and Rotterdam).
Tijdschr. Nederl. Ind.—Naturkundig Tijdschrift voor Nederlandsch Indië (Batavia).
Timehri—Timehri : being the Journal of the Royal Agricultural and Commercial Society of British Guiana (Quelch : Demerara).
Termes Közlöny—Természettudományi Közlöny kiadja a k. magyar termeszett. Társulat (Budapest).
Term. füzetek—Természettudományi füzetek : kiadja a magyar remzeti Múzeum (Journal of Zoology, &c., edited by Hungarian Museum at Budapest).
Tr. Albany Inst.—Transactions of the Albany Institute.
Tr. Am. Phil. Soc.—Transactions of the American Philosophical Society (Philadelphia).
Tr. Am. Ent. Soc.—Transactions of the American Entomological Society (Philadelphia).
Tr. A. S. Japan—Transactions of the Asiatic Society of Japan (Yokohama).
Tr. Barrow Nat. Field Club—Transactions of the Barrow Naturalists' Field Club.
Tr. Camb. Phil. Soc.—Transactions of the Cambridge Philosophical Society.
Tr. Cardiff Nat. Soc.—(See *Rep. Tr. Cardiff Nat. Soc.*)

- Tr. Conn. Ac.*—Transactions of the Connecticut Academy of Sciences (New Haven).
- Tr. Cumberl. Westmorl. Ass.*—Transactions of the Cumberland and Westmoreland Association for the Advancement of Literature and Science (Goodchild : Carlisle).
- Tr. Devon Ass.*—(See *Rep. Tr. Devon Ass.*)
- Tr. Dumfries Nat. Hist. Soc.*—The Transactions and Journal of Proceedings of the Dumfries and Galloway Natural History and Antiquarian Society (Dumfries).
- Tr. Edin. Geol. Soc.*—Transactions of the Edinburgh Geological Society.
- Tr. Edinb. Nat. Soc.*—Transactions of the Edinburgh Field Naturalists' and Microscopical Society.
- Tr. Ess. Club = Ess. Nat.*—Essex Naturalist: being the Journal, Transactions, and Proceedings of the Essex Field Club (Buckhurst Hill).
- Tr. E. Kent Nat. Hist. Soc.*—Transactions of the East Kent Natural History Society (Canterbury).
- Tr. E. Soc.*—Transactions of the Entomological Society of London.
- °*Tr. Geol. Soc.*—Transactions of the Geological Society of London.
- Tr. Hertf. Soc.*—Transactions of the Hertfordshire Natural History Society and Field Club (Watford).
- Tr. Kansas Ac.*—Transactions of the Kansas Academy of Science (Topeka).
- Tr. Leicester Soc.*—Transactions of the Leicester Literary and Philosophical Society (Leicester).
- Tr. L. S. (2)*—Transactions of the Linnean Society, London. Second series.
- Tr. L. S. New York*—Transactions of the Linnean Society of New York.
- Tr. Leeds Nat. Club*—Transactions of the Leeds Naturalists' Club.
- Tr. Manch. Geol. Soc.*—Transactions of the Manchester Geological Society.
- Tr. Manch. Micr. Soc.*—Transactions of the Manchester Microscopical Society.
- Tr. Middlesex Soc.*—Transactions of the Middlesex Natural History and Science Society.
- Tr. Newbury Club*—Transactions of the Newbury District Field Club.
- Tr. Norw. Soc.*—Transactions of the Norfolk and Norwich Naturalists' Society (Norwich).
- Tr. Notts. Soc.*—Transactions of the Nottingham Naturalists' Society.
- Tr. N. York Ac. Sci.*—Transactions of the New York Academy of Sciences (New York).
- Tr. N. Z. Inst.*—Transactions and Proceedings of the New Zealand Institute (Wellington).
- Tr. Odont. Soc.*—Transactions of the Odontological Society.
- Tr. Ottawa Nat. Club*—Transactions of the Ottawa Field-Naturalists' Club.
- Tr. & P. Perthsh. Soc.*—Transactions and Proceedings of the Perthshire Society of Natural Science (Perth).
- Tr. R. Irish Ac.*—Transactions of the Royal Irish Academy (Dublin).
- Tr. S. African Phil. Soc.*—Transactions of the South African Philosophical Society (Cape Town).

- Tr. R. Soc. Canada*—Proceedings and Transactions of the Royal Society of Canada (Montreal).
- Tr. R. Soc. Edinb.*—Transactions of the Royal Society of Edinburgh.
- Tr. R. Soc. S. Austr.*—Transactions and Proceedings and Report of the Royal Society of South Australia (Adelaide).
- Tr. R. Soc. Vict.*—Transactions and Proceedings and Report of the Royal Society of Victoria.
- Tr. Shropshire Soc.*—Transactions of the Shropshire Archæological and Natural History Society (Shrewsbury and Oswestry).
- Tr. Stirling Soc.*—Transactions of the Stirling Natural History and Archæological Society.
- Tr. St. Louis Acad.*—Transactions of the Academy of Science of St. Louis.
- °Tr. Tyneside Club*—Transactions of the Tyneside Naturalists' Field Club (Newcastle-upon-Tyne).
- Tr. Wisconsin Acad.*—Transactions of the Wisconsin Academy of Sciences, Arts, and Letters (Madison). (Also *Bulletin*.)
- Tr. Woolhope Nat.*—Transactions of the Woolhope Naturalists' Field Club (Hereford).
- Tr. Yorksh. Union*—Transactions of the Yorkshire Naturalists' Union (London & Leeds).
- Tr. Z. S.*—Transactions of the Zoological Society (London).
- Trav. Ac. Reims*—Travaux de l'Académie nationale de Reims (Reims).
- Trav. Inst. Zool. Lille*—Travaux de l'Institut Zoologique de Lille et de la Station maritime de Wimereux (Lille).
- Trav. Lab. Histol.*—Travaux du Laboratoire d'Histologie du Collège de France, École pratique des Hautes Études (Ranvier : Paris).
- Trav. Soc. Univ. Kharkow*—Travaux de la Société des Naturalistes à l'Université Impériale de Kharkow.
- Trencsén term. egy.*—Trencsén mezzei természettudományi egysület (Trencsin).
- Tromsø Mus. Aarsk.*—Tromsø Museum's Aarshefter.
- Trudui Kazan. Univ.*—Trudui obshtchestva estestvoespytatelei pre imperatorskom Kasanskom Universitet.
- Trudui Kharkoff Univ.*—Trudui obshtchestva ispytatelei prihody pre imp. Kharkovskom universitet (Kharkoff).
- Trudui Russ. Nat.*—Trudui sezda russkich estestvoespytatelei.
- Trudui St. Petersburg Nat.*—Trudui sanct Petersburgkova obshtchestva estestvoespytatelei.
- Uebers. Arb. schles. Ges. Breslau*—Uebersicht der Arbeiten und Verhandlungen des schlesischen naturwissenschaftlichen Gesellschaft in Breslau.
- Unters. Nat.*—Untersuchungen zur Naturlehre des Menschen und der Thiere (Moleschott : Giessen).
- Upsala Univ. Årsskrift*—Upsala Universitets Årsskrift (Upsala). (Also *Act. Upsala*.)

- Vunnan Lioar.*—Vannin Lioar. Published quarterly for the Isle of Man Natural History and Antiquarian Society (Kermode : Ramsey).
- Verh. Ak. Amst.*—Verhandelingen der koninklijke Akademie van Wetenschappen (Amsterdam). (Also *JB.*)
- Verh. Batav. Genoots.*—Verhandelingen van het Bataviaasch Genootschap van Kunsten en wetenschappen (Batavia) (1880).
- Verh. geol. Reichsanst.*—Verhandlungen der k.-k. geologischen Reichsanstalt (Vienna). (Also *JB.*)
- Verh. Ges. Basel*—Verhandlungen der naturforschenden Gesellschaft in Basel (Bâle).
- Verh. Ges. Würzb.*—Verhandlungen der physikalisch - medicinischen Gesellschaft zu Würzburg. (Also *SB.*)
- Verh. k. Leopold. Carol. Akad. Naturf.*—(See *N. Act. Ac. Leop. Carol. Nat. cur.*)
- Verh. naturw. Ver. Karlsruhe*—Verhandlungen des naturwissenschaftlichen Vereins in Karlsruhe.
- Verh. siebenb. Ver.*—Verhandlungen und Mittheilungen des siebenburgischen Vereins für Naturwissenschaften (Hermannstadt).
- Verh. Ver. Brünn.*—Verhandlungen des naturforschenden Vereins in Brünn.
- Verh. Ver. Hamb.*—Verhandlungen des Vereins für naturwissenschaftliche Unterhaltung zu Hamburg.
- Verh. Ver. Heidelb.*—Verhandlungen des naturhistorisch-medicinischen Vereins zu Heidelberg.
- Verh. Ver. Presburg*—Verhandlungen des Vereins für Natur- und Heilkunde zu Presburg.
- Verh. Ver. Rheint.*—Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande und Westphalen (Bonn). (Also *CB.*)
- Verh. s.-b. Wien*—Verhandlungen der Kaiserlichen-königlichen zoologisch-botanischen Gesellschaft in Wien (Vienna). (Also *SB.*)
- Versl. Ak. Amst.*—Verslagen en Mededeelingen der k. Akademie van Wetenschappen (Amsterdam).
- Vict. Nat.*—Victorian Naturalist (Melbourne).
- Vid. Medd.*—Videnakabelige Meddelelser fra den naturhistoriske Forening (Copenhagen).
- Viert. Ges. Zürich*—Vierteljahrschrift des naturforschenden Gesellschaft in Zurich (Wolf : Zurich).
- Wesley Nat.*—The Wesley Naturalist. Monthly Journal of the Wesley Scientific Society (Dallinger et alii : London).
- West Am. Scientist*—The West American Scientist (San Diego).
- Wiedomosci z nauk przyrod.* = Materialien zu dem Wissenschaften (Warsaw).
- Wien. ent. Z.*—Wiener entomologische Zeitung (Vienna).
- Wilt. Mag.*—The Wiltshire Archaeological and Natural History Magazine (Devizes).
- York. Phil. Soc.*—Yorkshire Philosophical Society Annual Report (York).
- Young Nat.*—The Young Naturalist (Morley : Huddersfield).

- Z. Biol.*—Zeitschrift für Biologie (München).
Z. Ent. Bresl.—Zeitschrift für Entomologie (Breslau).
Z. Ferdinand. Tirol Vorarlberg—Zeitschrift des Ferdinandeums für Tirol und Vorarlberg (Innsbrück).
Z. f. Ethnol.—Zeitschrift für Ethnologie (Bastian & Hartmann : Berlin).
Z. f. Thiermed.—Zeitschrift für Thiermedizin und vergleichende Pathologie).
Z. geol. Ges.—Zeitschrift der deutschen geologischen Gesellschaft (Berlin).
Z. ges. Orn.—Zeitschrift für die gesammte Ornithologie (Von Madarász : Budapest).
Z. Naturw.—Zeitschrift für Naturwissenschaften. Original Abhandlungen und Berichte herausgegeben im Auftrage der naturwissenschaftlichen Vereins für Sachsen und Thüringen (Brass : Halle-a-S.).
Z. wiss. Geogr.—Zeitschrift für wissenschaftliche Geographie (Kettler : Lahr, in Baden).
Z. wiss. Mikr.—Zeitschrift für wissenschaftliche Mikroskopie und für mikroskopische Technik (Berens : Braunschweig).
Z. wiss. Zool.—Zeitschrift für wissenschaftliche Zoologie (Köl liker & Ehlers : Leipzig).
Zapiski Kiev.—Zapiski Kievskova Obshtchestva Estestvoespytatelei (Kieff).
Zapiski Novoross. Obsch. Estestv.—Zapiski novorossiysche Obshtchestva estestvoespytatelei (Odessa).
Zool.—The Zoologist (Harting : London).
Zool. Anz.—Zoologischer Anzeiger (Carus : Leipzig).
Zool. Beitr.—Zoologische Beiträge (Schneider : Breslau).
Zool. Gart.—Der Zoologische Garten (Noll : Frankfurt).
Zool. Jahrb.—Zoologische Jahrbücher (Spengel : Giessen).
Zool. JB.—Zoologischer Jahresbericht (Mayer & Giesbrecht : Berlin).
Zool. Mag.—The Zoological Magazine (Tokyo).
Zool. Rec.—The Zoological Record (Beddard : London).

An asterisk prefixed to a quotation signifies that the Recorder has not seen the journal or work referred to.

CONTENTS.

GENERAL SUBJECTS. By J. ARTHUR THOMSON, M.A., F.R.S.E.

	Page	Special Subjects :	Page
Text Books, General Works, and Essays	1	Protoplasm and the Cell . .	18
Theory of Evolution :		Oogenesis	22
General	7	Spermatogenesis	28
Environment	14	Sex and Reproduction	30
Heredity	15		

MAMMALIA. By R. LYDEKKER, B.A., F.G.S.

Introduction	1	Chiroptera	35
The General Subject	2	Rodentia	36
Faunas	23	Ungulata	41
Special Structures, Develop- ment, &c.	24	Sirenia	54
Special Work	25	Cetacea	54
Primates	25	Edentata	57
Carnivora	26	Marsupialia	58
Insectivora	33	Monotremata	63
		Incertæ sedis	64

AVES. By A. H. EVANS, M.A., F.Z.S.

Introduction	1	Fulicariæ	88
The General Subject	3	Alectorides	89
Carinatae	49	Limicolæ	89
Passeres	49	Gaviæ	91
Picariæ	67	Tubinæ	92
Psittaci	71	Pygopodes	93
Striges	72	Impennes	93
Accipitres	73	Crypturi	93
Steganopodes	75	Ratitæ	94
Herodiones	76	Immanes	94
Odontoglossæ	77	Apteryges	94
Anseres	77	Megistanes	94
Columbæ	78	Rhes	94
Gallinæ	86	Struthiones	95
Opisthocomi	88	Formæ sedis incertæ	95

REPTILIA AND BATRACHIA. By G. A. BOULENGER.

	Page		Page
General	1	Chelonia	19
Fauna	2	Ichthyosauria	21
Palæontological	5	Plesiosauria	21
REPTILIA	6	Rhynchocephalia	22
Lacertilia	6	Theromorpha	22
Rhoptoglossa	11	Incertæ sedis	22
Pythonomorpha	11	BATRACHIA	22
Ophidia	11	Ecaudata	23
Ornithosauria	16	Caudata	27
Dinosauria	17	Apoda	28
Emydosauria	18	Stegocephala	28

PISCES. By G. A. BOULENGER.

General	1	Teleostei	13
Fauna	3	Acanthopterygii	14
Palæontological	5	A. Pharyngognathi	20
Palæichthyes	6	Anacanthini	21
Ichthyotomi	6	Physostomi	23
Chondropterygii	6	Lophobranchii	29
Selachioidei	7	Plectognathi	29
Batodei	9	Cyclostomata	29
Holocephala	10	Leptocardii	30
Ganoidei	10	Incertæ sedis	30

TUNICATA. By PROF. W. A. HERDMAN, D.Sc., F.L.S.

List of Publications	1	Phylogeny	3
Anatomy	2	Systematic	4
Physiology	3	Larvacea	4
Development	3	Thaliacea	4
Geographical Distribution	3	Ascidacea	5

MOLLUSCA. By W. E. HOYLE, M.A., F.R.S.E.

List of Publications	1	(Gastropoda) Heteropoda	68
Anatomy and Physiology	32	" Prosobranchiata	69
Geographical Distribution	43	" Polyplacophora	77
Cephalopoda	55	" Aplacophora	77
Pteropoda	56	Scaphopoda	78
Gastropoda Pulmonata	57	Pelecypoda	78

BRACHIOPODA. By W. E. HOYLE, M.A., F.R.S.E.

List of Publications	1	Inarticulata	4
Text-Books, Anatomy, &c.	4	Articulata	5
Geographical Distribution	4		

POLYZOA. By W. E. HOYLE, M.A., F.R.S.E.

List of Publications	1	Eupolyzoa	6
Anatomy and Physiology	4	Entoprocta	6
Geographical Distribution	5	Ectoprocta	6
Classification	6	Cyclostomata	7
Vermiformia	6	Ctenostomata	8
		Cheilostomata	8

CRUSTACEA. By CECIL WARBURTON, B.A.

	Page		Page
List of Publications	1	Cladocera	22
Systematic	11	Lophyropoda	22
Podophthalmia	12	Ostracoda	22
Decapoda	12	Copepoda	22
Edriophthalmia	16	Anchoracephala	23
Isopoda	16	Cirrhipedia	23
Trilobita	17	Morphology	23
Amphipoda	17	Physiology	26
Merostomata	21	Classification	27
Eurypteridæ	21	Palæontology	28
Branchiopoda	21	Geographical Distribution	28
Phyllopoda	21		

ARACHNIDA. By R. INNES POCOCK.

Titles of Faunistic Papers	1	Solpugidea	15
Distribution	3	Pseudoscorpionidea	15
General	4	Phalangidea	16
Systematic	4	Acaridea	16
Araneidea	4	Pycnogonida	24
Palpigradi	13	Tardigrada	25
Pedipalpi	13	Gigantostraca	25
Scorpionidea	14		

MYRIOPODA. By R. INNES POCOCK.

Anatomy, Physiology, &c	1	Chilopoda	3
List of Faunistic Publications	2	Diplopoda	4
Distribution	3	Protracheata	5

INSECTA. By D. SHARP.

Introduction	1	IV. Economic	81
I. Titles	2	V. Bibliography, Nomenclature, Biography	83
II. Anatomy and Physiology	62	VI. Systematic	85
III. Faunistic and Palæontology	66		

(a.) COLEOPTERA.

	Page		Page		Page
The General Subject	85	Silphidæ and Sphæriidæ	103	Thorictidæ, Dermestidæ, and Byrrhidæ	110
Cicindelidæ	85	Trichopterygidæ and Scaphidiidæ	104	Parnidæ, Georysidæ, and Heteroceridæ	111
Carabidæ	86	Histeridæ	105	Lucanidæ	111
Halipidæ and Dytiscidæ	93	Phalacridæ	107	Scarabæidæ	112
Gyrinidæ	94	Nitidulidæ	108	Buprestidæ	124
Hydrophilidæ	94	Trogositidæ	108	Throscidæ, Monomimidæ, Eucnemidæ	126
Platypsyllidæ	96	Colydiidæ and Rhysodidæ	109	Elatridæ	127
Staphylinidæ	96	Cucujidæ	109		
Pselaphidæ	100	Cryptophagidæ, Lathridiidæ, and Mycetophagidæ	110		
Pausidæ	102				
Scydmenidæ	102				

(a.) COLEOPTERA—continued.

Page	Page	Page
Cebrionidæ, Rhi- pidoceridæ, and Dascillidæ . . . 129	Othniidæ and Nilionidæ . . . 141	Curculionidæ . . . 143
Telephoridæ . . . 129	Melandryidæ . . . 141	Scolytidæ . . . 153
(Malacodermidæ) 129	Pythidæ . . . 141	Brenthidæ . . . 153
Cleridæ . . . 132	Lagriidæ . . . 141	Anthotribidæ, Bruchidæ . . . 154
Ptinidæ . . . 132	Pedilidæ, Anthi- cidæ, and Pyrochroidæ . . 142	Cerambycidæ . . . 154
Bostrichidæ and Cioidæ . . . 132	Mordellidæ, Rhi- pidophoridæ . . 142	Chrysomelidæ . . . 160
Tenebrionidæ . . 133	Cantharidæ . . . 142	Languriidæ . . . 170
Cistelidæ . . . 138	Ædemeridæ . . . 143	Erotylidæ . . . 170
		Endomychidæ . . 173
		Coccinellidæ . . . 173
		Corylophidæ . . . 174

(b.) HYMENOPTERA.

The General Sub- ject 175	Terebrantia	Terebrantia
Aculeata	Chrysididæ . . 186	Mymaridæ and
Apidæ 175	Ichneumonidæ . 187	Palecinidæ . . 202
Vespidæ . . . 178	Braconidæ . . . 196	Cynipidæ . . . 202
Crabronidæ . . 179	Evaniidæ . . . 198	Sessiliventræ
Mutillidæ . . . 185	Chalcididæ . . 198	Siricidæ . . . 203
Formicidæ . . . 185	Proctotrupidæ . 200	Tenthredinidæ . 203

(c.) LEPIDOPTERA.

The General Sub- ject 206	Heterocera	Heterocera
Rhopalocera	Castniidæ, Uraniidæ, and Agaristidæ . . 231	Saturniidæ, En- dromidæ, Ce- ratocampidæ . 239
Papilionidæ . . 206	Chalcosiidæ, Pe- ricopidæ, Eus- chemidæ, Hi- mantopteridæ 231	Lasiocampidæ and Bomby- cidæ 240
Pieridæ 208	Zygænidæ, Syn- tomidæ 231	Zeuzeridæ, He- pialidæ 241
Danaidæ 210	Arctiidæ 233	Cymatophoridæ 241
Acraeidæ 211	Lithosiidæ and Hypsidæ . . . 234	Noctuidæ 242
Heliconiidæ . . 211	Nycteolidæ, Nyctemeridæ, Callidulidæ . . 235	Deltoidæ 250
Nymphalidæ . . 211	Liparidæ 235	Geometridæ . . 251
Morphidæ . . . 215	Psychidæ 237	Pyralidæ, Sicu- lodidæ 259
Satyridæ 215	Notodontidæ . . 237	Crambidæ 264
Elymniidæ . . . 218	Limacodidæ, Drepanulidæ 238	Tortricidæ . . . 272
Erycinidæ . . . 218		Tineidæ 273
Lycænidæ 222		Pterophoridæ, Alucitidæ . . . 278
Hesperiidæ . . . 226		
Heterocera		
Sphingidæ . . . 229		
Ægeriidæ, Thy- rididæ, Hete- rogynidæ . . . 230		

(d.) DIPTERA.

The General Sub- ject 279	Culicidæ and Chironomidæ . . 282	Tabanidæ 285
Cecidomyiidæ . . 279	Orphnephilidæ & Psychodidæ . . 283	Leptidæ 285
Mycetophilidæ . . 281	Tipulidæ 283	Asilidæ 285
Simuliidæ and Bibionidæ . . . 282	Stratiomyidæ . . 284	Midaidæ and Nemestrinidæ . 286
		Bombyliidæ . . . 286

(d.) DIPTERA—*continued*.

	Page		Page		Page
Therevidæ and		Muscidæ	291	Ephydridæ, Dros	
Cyrtidæ	286	Anthomyiidæ	294	philidæ	295
Empidæ	286	Helomyzidæ, Scio-		Oscinidæ	295
Dolichopodidæ	287	myzidæ	294	Agromyzidæ, Bor-	
Syrphidæ	287	ortalidæ, Trypet-		boridæ	296
Conopidæ and		idæ	295	Phoridæ	296
Estridæ	289	Lonchæidæ, Sa-		Hippoboscidæ	296
Tachinidæ	289	promyzidæ, He-		(Aphaniptera)	296
Dexidæ and Sarco-		teroneuridæ	295		
phagidæ	292				

(e.) RHYNCHOTA.

The General Sub-		(Hemiptera—He-		Hemiptera — Ho-	
ject	297	teroptera)		moptera	304
Hemiptera — He-		Saldidæ	303	Cicadidæ	304
teroptera	297	Emesidæ, Redu-		Fulgoridæ	305
Pentatomidæ	297	viidæ, and Na-		Cercopidæ	306
Coreidæ	298	bidæ	303	Membracidæ	306
Lygæidæ and		Hydrometridæ,		Jassidæ	306
Pyrrhocoridæ	299	Naucoridæ,		Psyllidæ	307
Tingitidæ	300	Nepidæ, No-		Aphididæ	307
Aradidæ	301	tonectidæ	303	Coccidæ and	
Capsidæ	301			Aleurodi læ	308
Cimicidæ and				(Anoplura)	309
Anthocoridæ	302				

(f.) NEUROPTERA.

The General Sub-		Pseudo-Neuroptera	313	Psocidæ	315
ject	310	Thysanura	313	Perlidæ	315
Trichoptera	310	Mallophaga	314	Ephemeridæ	315
Neuroptera—Plan-		Thysanoptera	314	Odonata	316
pennia	311	Termitidæ	314		

(g.) ORTHOPTERA.

The General Sub-		Blattidæ	317	Gryllidæ	318
ject	317	Mantidæ and Phas-		Locustidæ	319
Forficulidæ	317	matidæ	318	Acrididæ	324

ECHINODERMATA. By O. H. LATTER, B.A.

List of Publications	1	Echinoidea	12
Subject Index	9	Crinoidea	13
Classification	10	Ophiuroidea	15
Systematic	11	Asteroidæ	16
Holothuroidea	11		

VERMES. By P. CHALMERS MITCHELL, M.A.

	Page		Page
Introduction	1	Rotifera	23
List of Publications	2	Nemertea	24
References. Systematic Classification	17	Trematoda	24
Gasterotricha	17	Cestoda	25
Enteropneusta	17	Turbellaria	25
Chaetopoda	17	Chaetognatha	26
Archannelida	23	Nematoda	26
Gephyrea	23	Acanthocephala	27
Hirudinea	23	List of References. Subject Matter. Classification	27

CŒLEENTERATA. By W. E. HOYLE, M.A., F.R.S.E.

List of Publications	1	Ctenophora	17
Anatomy and Physiology	11	Hydrozoa	17
Geographical Distribution	14	Anthozoa	26

SPONGIÆ. By O. H. LATTER, B.A.

List of Publications	1	Systematic	6
Subject-Index	4	Hexactinellida	6
Classification	5	Demospongiæ	6

PROTOZOA. By CECIL WARBURTON, B.A.

List of Publications	1	Physiology and Development	19
Systematic	9	Palæontology	20
Gymnomyxa	10	Classification	21
Corticata	13	Geographical Distribution	21
Morphology and Life-History	16		

INDEX TO GENERA AND SUBGENERA DESCRIBED AS NEW, &C.

ZOOLOGICAL RECORD

FOR 1888.

GENERAL SUBJECTS.*

BY

J. ARTHUR THOMSON, M.A., F.R.S.E.

PLAN OF RECORD.

- | | |
|---------------------------------|-----------------------------|
| (A.) TEXT-BOOKS, GENERAL WORKS. | (C) SPECIAL SUBJECTS. |
| (B.) THEORY OF EVOLUTION. | 1. Protoplasm and the Cell. |
| 1. General. | 2. Oogenesis. |
| 2. Environment. | 3. Spermatogenesis. |
| 3. Heredity. | 4. Sex and Reproduction. |
-

(A.) TEXT-BOOKS, GENERAL WORKS, AND ESSAYS (NOT INCLUDING MONOGRAPHS).

THE most important works here recorded, apart from re-editions like those of ECKER, HUXLEY & MARTIN (HOWES & SCOTT), MARSHALL & HURST, FOSTER, and WIEDERSHEIM, series like those of British Museum Catalogues or BRONN's "Thierreichs," and articles like those of GEDDES and LANKESTER, are probably those of AGASSIZ, DUVAL, HERTWIG, LANG, MCKENDRICK, NEUMAYR, RANVIER, VOGT & YUNG, and ZITTEL. By itself, as a zoological monument for the year, is HATCHETT JACKSON's edition of Rolleston's Forms of Animal Life.

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the work referred to.

AGASSIZ, A. Three Cruises of the United States Coast and Geodetic Survey Steamer 'Blake,' in the Gulf of Mexico, in the Caribbean Sea, and along the Atlantic Coast of the United States, from 1877 to 1880. Bull. Mus. C. Z., vols. xiv & xv. Separately, Boston & New York: 8vo, vol. I, xxii & 314 pp., 194 figs.; vol. II, 220 pp., figs. 195-545.

Vol. II gives an account of the characteristic deep-sea types, and includes great wealth of illustration, with many full-page plates. In vol. I chapters on history of deep-sea work, on the relations of American and West Indian fauna, on deep-sea and pelagic fauna, on submarine deposits, on the physiology of deep-sea life.

BADOUREAU, A. Coup d'œil sur les sciences. Leur moyens d'investigation, leur histoire, leur objet, leur utilité. Rev. Sci. xlii, pp. 34-41.

°BAER, K. E. VON. Ueber Entwicklungsgeschichte der Thiere. Beobachtung und Reflexion. Th. II (Schlussheft) herausgegeben von L. Stieda. Königsberg: 4to, v & 317-400 pp.

The end of the unfinished work (1828-37).

BALL, V. Further Notes on the Identification of the Animals and Plants of India which were known to early Greek authors. P. R. Irish Ac. 3rd ser. I, pp. 1-9.

BEARD, J. The old Mouth and the new. A study in Vertebrate Morphology. Anat. Anz. iii, 1888, pp. 15-24.

The hypophysis represents the old mouth and its innervation.

BEAUNIS, H. L'évolution du système nerveux. Rev. Sci. xlii, pp. 257-263, 360-368, & 757-764.

°BLANCHARD, E. La vie des êtres animés. Paris: 18mo, xvi & 296 pp.

°BLANCHARD, R. Traité de Zoologie médicale. Partie 3 (fin du Tome I). Paris: 8vo, pp. 481-808, illustr.

°BOAS, J. E. V. Laerebog i Zoologien. Kjöbenhavn: 8vo, 570 pp., 354 figs.

°BOGDANOW, A. Medizinskaja Zoologija. Medicinische Zoologie. II. Die Embryonalblätter und die Anlage der primären Organe. (Russian.) Moskau: 8vo, xiv & 409 pp., 2 pls.

BRASS, A. Kurzes Lehrbuch der normalen Histologie des Menschen und typischer Thierformen. Leipzig: 8vo, viii & 484 pp., 210 figs.

°—. Die niedrigsten Lebewesen. Ihre Bedeutung als Krankheits-erregere, ihre Beziehung zum Menschen und den übrigen Organismen und ihre Stellung in der Natur. Leipzig: 8vo, 66 figs.

BRAUER, A. Die arktische Subregion. Ein Beitrag zur geographischen Verbreitung der Thiere. Zool. Jahrb. iii, 2, pp. 189-308, 1 pl.

British Museum Catalogues. See—*Mammalia* (Marsupialia and Monotremata) (OLDFIELD THOMAS); *Aves* (SCLATER, P. L., SHARPE, R. BOWDLER), *Reptilia*, Fossil (LYDEKKER, R.); *Mollusca*, Cephalopoda (FOORD, A. H.).

BROWN'S Klassen und Ordnungen des Thierreichs. See—*Mammalia* (LECHE, W.); *Aves* (GADOW, HS.); *Reptilia* (HOFFMANN, C. K.); *Vermes* (PAGENSTECHE, A.), *Arthropoda* (GERSTÄCKER); *Protozoa* (BÜTSCHLI, O.).

BRÜHL, C. B. Zootomie aller Tierklassen für Lernende, nach Autopsien skizziert. (Illustr. durch 200 Taf. mit nahe 4000 Fig. Atlas in 50 Lief.) Lief. 40. Wien: fol., Taf. 157–160, 4 pls., 22 pp. text. [See *Mollusca*.]

Challenger Reports. See—*Mammalia*, Seals, TURNER, W. *Tunicata*, HERDMAN, W. A. *Mollusca*: Pteropoda, PELSENER, P.; Heteropoda, SMITH, E. A. *Crustacea*: Anomura, HENDERSON, J. R.; Macrura, SPENCE-BATE, C.; Amphipoda, STEBBING, T. R. R. *Echinodermata*: Crinoidea, CARPENTER, P. H. *Vermes*: *Phoronis buskii*, W. K. MCINTOSH. Entozoa, LINSTOW, O. von. *Celenterata*: Actiniaria, HERTWIG, R.; Siphonophora, HÄCKEL, E.; Hydroida, ALLMAN, G. J. *Porifera*: Tetractinellida, SOLLAS, W. J.

Chambers' Encyclopædia. Edinburgh and London. Vol. I. A–Bee, 824 pp.; Vol. II. Be–Cat, 828 pp.

Various zoological articles—*e.g.*, Ant, Bee, Biology, Bird, Brain, &c.

*COLIN, G. *Traité de physiologie comparée des animaux considérée dans ses rapports avec les sciences naturelles, la médecine, la zootechnie et l'économie rurale*. 3 Ed. T. II. Paris: 8vo, 1116 pp., 130 figs.

DAVIS, J. R. A. *A Text-Book of Biology, comprising Vegetable and Animal Morphology and Physiology*. London: 8vo, xiii & 462 pp., 158 figs.

*DESPLATS, V. *Éléments d'histoire naturelle; Zoologie, comprenant l'anatomie, la physiologie, et la classification*. Nouv. Ed., rev. et augm. Paris: 8vo, 661 pp., illustr.

DÖDERLEIN, L. [See STEINMANN, G.]

DUVAL, M. *Atlas d'Embryologie*. Paris: 4to, 116 pp., 40 pla., 652 figs.

ECKER, A. *Die Anatomie des Frosches. Ein Handbuch für Physiologen, Ärzte und Studierende*. Abt. I. Knochen- und Muskellehre. 2 Aufl. Braunschweig: vii & 139 pp., 96 figs.

Encyclopædia Britannica. Vol. XXIII. Edinburgh: 4to, 860 pp., 2 pls.

Numerous zoological articles—*e.g.*: Tapeworms and Trematoda (W. E. HOYLE); Tiger (W. H. FLOWER); Tortoise (A. GÜNTHER); Tinamou, Toucan, &c. (A. NEWTON); *Tunicata* (W. A. HERDMAN); &c.

Encyclopædia Britannica. Vol. XXIV. Edinburgh: 4to, 834 pp., 17 pls.

Numerous zoological articles, *e.g.*: Variation and Selection (P. GEDDES); Vertebrata (E. RAY LANKESTER); Viper (ST. GEORGE MIVART); Vulture (A. NEWTON); Wasps (A. E. SHIPLEY); Whale (W. H. FLOWER); Worm (F. E. BEDDARD); Zebra (W. H. FLOWER); &c.

*ELLENBERGER, W. *Handbuch der vergleichenden Histologie und Physiologie der Haussäugethiere*. Bd. I. Berlin: 8vo, xiv & 765 pp., illustr.

[*ELLENBERGER, W.] Grundriss der vergleichenden Histologie der Haussäugetiere. Berlin: 8vo, vi & 270 pp., 373 cuts.

EWART, J. C., & SMITH, W. The Dissection of the Rabbit. Edin.: 4to, 44 pp.

*FERRIERE, E. La Vie et l'Ame. Paris: 12mo, 580 pp.

The phenomena common to the life of plants and animals; and intellectual life in terms of cerebral functions.

FOSTER, M. A Text-book of Physiology. 5th Ed. Part I, comprising Book I. London: 8vo, 352 pp., 61 figs.

GAUDRY, A. Les ancêtres de nos animaux dans les temps géologiques. Paris: 16mo, xv & 296 pp., 49 figs.

GEDDES, P. Article "Biology." Chambers' Encyclopædia, vol. ii, pp. 155-162.

*GILIS, P. L'Embryologie; son histoire, son rôle dans les sciences anatomiques. Montpellier: 8vo, 30 pp.

*GRABER, V. Leitfaden der Zoologie. Leipzig: 8vo, iv & 240 pp., 2 col. pls., 498 figs., 60 col.

*GÜNTHER, S., & WINDELBAND, W. Geschichte der antiken Naturwissenschaft und Philosophie. Nördlingen: 8vo, 362 pp.

*HARTINGER, A. Wandtafeln für den naturgeschichtlichen Anschauungs-Unterricht. Abth. I. Zoologie, Lief. xii & xiii. Wien: fol., 10 pls.

HATSCHEK, B. Lehrbuch der Zoologie. Eine morphologische Uebersicht des Thierreichs zur Einführung in das Studium dieser Wissenschaft. Lief. I. Jena: 8vo, iv & 144 pp., 155 figs.

*HEILPRIN, A. The Animal Life of our Seashore. With special reference to the New Jersey Coast and the southern shore of Long Island. Philadelphia: 12mo, 130 pp., 8 pls. and figs.

*HENSEN, V. Ueber biologische Meeresuntersuchungen. Humboldt, vii, pp. 256-265.

HERTWIG, O. Lehrbuch der Entwicklungsgeschichte des Menschen und der Wirbelthiere. 2 Aufl. Jena: 8vo, viii & 519 pp., 304 figs., 2 pls.

HOWES, G. B. [See HUXLEY, T. H.]

HURST, C. H. [See MARSHALL, A. MILNES.]

HUXLEY, T. H., & MARTIN, H. N. A Course of Elementary Instruction in Practical Biology. Revised edition, extended and edited by G. B. HOWES and D. H. SCOTT. London: 8vo, xvi & 512 pp.

HATCHETT JACKSON, W. Forms of Animal Life. A Manual of Comparative Anatomy, with descriptions of selected types, by the late G. Rolleston. Second Edition, revised and enlarged by W. Hatchett Jackson. Oxford: 8vo, xxxii & 937 pp., 14 pls., 13 figs.

KINGSLEY, J. S. *The Riverside Natural History*. London : 4to, 6 vols. (each about 400 pp.), with 2200 cuts, 168 pls., 12 coloured.

A valuable work, edited by J. S. KINGSLEY, with articles by 36 American naturalists. It is known in its American edition (Boston) as *The Standard Natural History*.

KRUKENBERG, C. F. W. *Vergleichend-physiologische Studien*. Experimentelle Untersuchungen. II. Reihe. Abth. 4 & 5 (1st half). Heidelberg : 8vo, pp. 188 & 156, 4 & 2 pls.

KÜHNE, W. *On the Origin and the Causation of Vital Movement* (Ueber die Entstehung der vitalen Bewegung). Croonian Lecture. P. R. Soc. xlv, pp. 427-448, 13 figs.

The functional and morphological unity of vital movement.

LACAZE-DUTHIERS, H. DE. *Le Monde de la Mer et ses Laboratoires*. Rev. Sci. xlii, pp. 162-173, 26 figs., and pp. 198-212, 10 figs.

*LACHMANN, H. *Das Terrarium, seine Einrichtung, Bepflanzung, und Bevölkerung*. Magdeburg : 8vo, vii & 120 pp., illustr.

LANG, A. *Lehrbuch der vergleichenden Anatomie zum Gebrauche bei vergleichend anatomischen und zoologischen Vorlesungen*. Neunte gänzlich umgearbeitete Auflage von Eduard Oscar Schmidt's Handbuch der Vergleichenden Anatomie. Abth. I. Jena : 8vo, iv & 290 pp., 191 figs.

As far as *Vermea*.

—. *Einfluss der Festsitzenden Lebensweise auf die Thiere und über den Ursprung der ungeschlechtlichen Fortpflanzung durch Theilung und Knospung*. Jena : 8vo, 116 pp.

LANKESTER, E. RAY. Article "Vertebrata." *Encycl. Brit.* xxiv, pp. 76-85.

—. Article "Zoology." *T. c.* pp. 799-820.

*LE CONTE, J. *Evolution and its Relation to Religious Thought*. New York : 18mo, 344 pp., illustr.

LEUCKART, R., & NITSCHKE, H. *Zoologische Wandtafeln*. Cassel : Lief. 23-26, Taf. 52-63, & Lief. 27 & 28, Taf. 64-68.

*LIESERING, A. G. T. *Atlas der Anatomie des Pferdes und der übrigen Haustiere*. 2 rev. Aufl., 6, 7, 8, 9 Lief. Leipzig : fol., pp. 95-151, 18 pls.

LUBBOCK, J. *The Senses, Instincts, and Intelligence of Animals ; with special reference to Insects*. *Internat. Sci. Ser.* lxx. London : 8vo, 292 pp., 118 figs.

MCKENDRICK, J. G. *A Text-book of General Physiology, including the Chemistry and Histology of the Tissues and the Physiology of Muscle*. Glasgow and London : 8vo, xxv & 516 pp., 318 figs.

McFADYEAN, J. *Comparative Anatomy of the Domesticated Animals*. Part I. *Osteology*. London : 8vo, 206 pp., 151 figs.

- MARSHALL, A. MILNES. *The Frog: an introduction to anatomy, histology, and embryology.* 3rd Edition. Manchester and London: 8vo, viii & 146 pp., 27 figs.
- , & HURST, C. H. *A junior course of practical Zoology.* 2nd Edition. London: 8vo, xxxii & 454 pp., 67 figs.
- MARSHALL, W. *Spaziergänge eines Naturforschers. Mit Zeichnungen von A. Wagen in Basel.* Leipzig: 8vo, 341 pp.
- . *Die Tiefsee und ihr Leben nach den neuesten Quellen gemeinschaftlich dargestellt.* Leipzig: 8vo, 343 pp., 4 pls., 114 figs.
- °MEINHOLD, —. *Wandbilder für den Unterricht in der Zoologie.* Ser. 1. Lief. 9 & 10. Dresden: imp. fol., 10 chromolith. pls.
- °MONIEZ, R. *Les parasites de l'homme, animaux et végétaux.* Paris: 12mo, 370 pp., 50 figs.
- *MÜLLER, A., & MÜLLER, K. *Thiere der Heimath. Mit zahlreichen Chromolithographien nach Original-Aquarellen von E. S. Deiker und nach Zeichnungen von A. Müller.* 2 Aufl., 1 Lief. Cassel: 16 pp., 2 pls.
- °MAISONNEUVE, P. *Nouveau cours d'histoire naturelle: Zoologie, anatomie et physiologie animales.* 2 Edition. Paris: 8vo, xxii & 607 pp., 210 figs.
- °NEUMANN, L. G. *Traité des maladies parasitaires non microbiennes chez des animaux domestiques.* Paris: 8vo, 700 pp., 306 figs.
Reviewed, *Rev. Sci.* xlii, pp. 183 & 184.
- NEUMAYR, M. *Die Stämme des Thierreichs. Wirbellose Thiere.* Bd. 1. Einleitung, Protozoen-Molluscoiden. Wien: 8vo, vi & 630 pp., 192 figs.
- NITSCHKE, H. [See LEUCKART, B.]
- °PERRIER, E. *Eléments d'anatomie et de physiologie animales.* Années v et vi. Paris: 12mo, 279 pp., illustr.
- °PIZZETTA, J. *Dictionnaire populaire illustré d'histoire naturelle, comprenant la botanique, la zoologie, l'anthropologie . . . avec l'application de ces sciences à la médecine, aux arts, et à l'industrie, suivi de la biographie de plus célèbres naturalistes. Avec une introduction par M. E. Perrier.* Fasc. 1. Paris: 8vo, 120 pp.
- POWER, H., & SEDGWICK, L. W. *The New Sydenham Society's Lexicon of Medicine and the Allied Sciences.* xv. Kid-Lin. Completion of vol. iii; no pagination.
- °RAHMER, S. *Physiologie oder die Lehre von den Lebensvorgängen im menschlichen und thierischen Körper.* Lief 1-9. Stuttgart: 8vo, 296 pp., illustr.
- BANVIER, L. *Traité technique d'Histologie.* L'ouvrage complet 1882-88. Paris: 8vo, 1109 pp., 379 figs.
- REICHENOW, A. *Handwörterbuch der Zoologie, Anthropologie, und Ethnologie.* Bd. v. Lan-Nerv. Breslau: 8vo, 640 pp., illustr.

- ROBERTSON, J. MACGREGOR. *Animal Physiology: an Elementary Text-Book*. London: 12mo, 378 pp.
- SCOTT, D. H. [See HUXLEY, T. H.]
- *STEINMANN, G. *Elemente der Paläontologie, unter Mitwirkung von L. Döderlein. 1. Hälfte (Protozoa-Gastropoda)*. Leipzig: 8vo, xi & 336 pp., 386 figs.
- *SÚKHIA, N. HORMASJI EDALJI. *A Manual of Comparative Anatomy of the Domesticated Quadrupeds*. Bombay: 1887, 8vo, 262 pp.
- TASCHENBERG, O. *Bibliotheca Zoologica II. (Verzeichniss der Schriften über Zoologie, 1861-1880)*. Lief. 6. Schluss Bd. ii. Leipzig: 8vo, pp. 1651-1970.
- VARIGNY, H. DE. *La philosophie biologique aux XVII et XVIII siècles*. Rev. Sci. xlii, pp. 226-235, 1 fig.
- *VAYSIERE, A. *Atlas d'anatomie comparée des Invertébrés*. Fasc. 2, 3. Paris: 4to, each with 15 pls.
- VOGT, C., & YUNG, E. *Lehrbuch der Praktischen Vergleichenden Anatomie*. Lief. xiii & xiv (end of vol. i). Braunschweig: 8vo, pp. 769-906, figs. 361-425.
- & —. *Traité d'Anatomie comparée pratique*. T. I, consisting of previously published parts. Paris: 8vo, viii & 897 pp., 425 figs.
- WIEDERSHEIM, B. *Grundriss der vergleichenden Anatomie der Wirbelthiere. 2. gänzlich umgearbeitete und stark vermehrte Auflage*. Jena: 8vo, xvi & 389 pp., 302 figs.
- *WILCKENS, M. *Grundriss der landwirthschaftlichen Hausthierlehre*. Bd. I. Form und Leistung der landwirthschaftlichen Hausthiere. Tübingen: ix & 184 pp., 136 figs.
- ZITTEL, K. A. VON. *Handbuch der Paläontologie. Abt. I. Paläozoologie*. Lief. ii. Band iii. Lief. 2. Pisces (Forts.) und Amphibien. München: 8vo, pp. 257-436, 154 figs.

(B.) THEORY OF EVOLUTION.

1. General.

- ARGYLL. *A Great Confession*. Nineteenth Cent. xxiii, pp. 142-160.
- Critique of Herbert Spencer's papers on "The Factors in Organic Evolution."
- . *Prophetic Germs*. Letter to Nature, xxxviii, 989, p. 564; 991, p. 615.
- . *Functionless Organs*. Letter to Nature, xxxviii, 980, pp. 341 & 342.

BORDIER, A. Les microbes et le transformisme. Bull. Soc. Anthropol. Par. xi, 4, pp. 73-779.

The variation of microbes in evidence of evolution.

BOURNE, G. C. Kleinenberg on the Development of *Lopadorhynchus*. Q. J. Micr. Sci. xxxviii, pp. 531-546.

Important discussion of the development of organs by substitution. "The functional activities of newly specialized tissues must always bear some relation to the function of the organ which determined their origin, and must either support or modify their action. . . . In no case of substitution are the intermediate steps represented by an indifferent germ-layer, but always by a functional and specifically differentiated organ."

BUTLER, S. Luck, or Cunning as the main means of Organic Modification? London: (1887) 8vo, 328 pp.

CLAUS, C. Lamarck als Begründer der Descendenzlehre. Wien: 8vo, 35 pp.

—. Ueber die Werthschätzung der natürlichen Zuchtwahl als Erklärungsprincip. . Wien: 8vo, 42 pp.

CLELAND, J. On Rational Teratology. Brit. Med. J., No. 1442, pp. 346-348.

CLODD, E. The Story of Creation: a Plain Account of Evolution. London: 8vo, 242 pp., 79 figs.

CONN, H. W. The significance of "Variety" and "Species." Letter to Science, x, 277, pp. 253 & 254.

The theory of "Physiological Selection" [Catchpool, Belt, Conn, Romanes]. Species are groups of animals in which variations have largely affected the sexual organs, with sometimes great and sometimes little change in other parts of the body. In varieties, on the other hand, variation may have affected any other part of the body to almost any degree, but has not affected the sexual system.

*COPE, E. D. Evolution and Idealism. Am. Nat. xxii, pp. 81-84.

COX, C. F. Dr. Edward Tyson and the Doctrine of Descent. Letter to Science, xi, 270, pp. 169 & 170.

On the importance of Tyson's "*Orang-Outang, sive Homo sylvestris*," 1699.

*DAVIS, G. Origin of Life and Species, and their Distribution: a new theory. Minneapolis: 12mo, 52 pp.

*DEXTER, R. The Kingdoms of Nature; or, Life and Organisation, from the Elements to the Man. Being a following of matter and force into vitality, vitality into organisation, and organisation into the various types of being, culminating in Man. Chicago: 1888, 8vo.

*DREYFUS, C. L'Évolution. Paris: 8vo.

• Review, Rev. Sci. xlii, pp. 54-56.

•DÜSING, C. Die Bedeutung der Konstitution des Körpers und die Vererbung erworbener Eigenschaften für die Entstehung der Arten. Humboldt, vii, 9, pp. 336-341.

DURAND, J. P. Genèse naturelle des formes animales. Rev. Sci. xli, pp. 741-752.

DYER, W. T. THISTLETON. Opening Address of Biological Section of British Association. Nature, xxxviii, 985, pp. 473-480; Rep. Brit. Ass. lviii, pp. 686-701.

— Mr. Romanes's Paradox. A Letter. Nature, xxxix, 992, pp. 7-9.

— Mr. Romanes on the Origin of Species. Letter to Nature, xxxix, 997, pp. 126 & 127.

EIMER, G. H. TH. Die Entstehung der Arten auf Grund von Vererben erworbener Eigenschaften nach den Gesetzen organischen Wachstums. Ein Beitrag zur einheitlichen Auffassung der Lebewelt. 1. Theil. Jena: 8vo, xii & 461 pp., 6 figs.

"The origin of species through the inheritance of acquired characters, according to the laws of organic growth." (1) Variations occur along definite determinate lines of development, and in a few directions. (2) The interaction of the external forces and the physico-chemical changes of the growing organism is the basis of variation. (3) As organisms progressively develop in accordance with "the laws of organic growth," literally growing into their places, species are but the stations in the progressive march. (4) "Constitutional impregnation," or "conservative adaptation," is the organic result of persistence in a given direction under similar conditions. (5) Variations due to environmental influence are certainly transmissible, and may modify the organism so as to originate new species without the help of natural selection. (6) Use and disuse may similarly condition new characters, which persist without natural selection. The latter has only a subordinate rôle; growth and the environment explain almost all.

"Variations occur throughout in perfectly definite, and only in a few directions, and are due to physico-chemical conditions in the interaction between the material composition of the body and external influences." "In my opinion, the physical and chemical changes which the organism experiences during its life, through the influence of the environment, and which it transmits, are the first conditions of modification, and of the origin of species. From the material thus supplied, the struggle for existence may select." All variations express themselves simply as growth, and that in different directions. "Just because the organic modification depends upon physico-chemical processes, the result, as in the inorganic crystal, is definite." "Varieties and species are essentially nothing but groups of forms which have remained at various stages of a progressive development." Emphasis is laid on this stoppage of forms (*Genepistasis*) at various levels. Six factors are taken in account: (1) Direct external influence; (2) strengthening through function, or the reverse from disuse; (3) struggle for existence, an indirect influence; (4) saltatory development, or sudden variations arising as the

result of correlation in kaleidoscopic fashion ; (5) constitutional impregnation, or conservative adaptation, due to continued persistence under the same conditions ; (6) sexual intermingling. The author also discusses, in successive chapters : adaptation ; acquired characters ; disuse of organs, degeneration, and panmixia ; the acquisition and inheritance of intellectual characteristics ; the development of organs and systems ; the laws of growth.

Review of Eimer ; *Rev. Sci.* xlii, pp. 550 & 551.

Review by F. DREYER ; *Biol. Centralbl.* viii, 4, pp. 118-123.

Review of Eimer's work by "P. C. M." ; *Nature*, xxxviii, 971, pp. 123-125.

Cf. critique by GÖRTE in *Deutsche Literaturzeitung*, No. 37 ; and Answer, No. 43.

[EIMER, G. H. TH.] *Die Entstehung der Arten*, &c. *Biol. Centralbl.* viii, 12, pp. 353-357.

Vindication from critiques in *Nature* and *Biol. Centralbl.*

—. *Die Streifung der Thiere*. Humboldt, vii, pp. 1-9, 11 figs., 1 pl.

The orderliness in the development of colour-markings in Mammals. They are indices of the history and relations of the animals, external fingerposts to their constitutional diatheses.

*FARGES, A. *La Vie et l'Evolution des Espèces*. Tome IV. St. Dizier : 8vo, 249 pp.

GEDDES, P. Article, "Variation and Selection." *Encycl. Brit.* 9th ed. vol. xxiv, pp. 76-85.

(1) History of theories of variation ; (2) theory of natural selection ; (3) corroborations, controversies, and accessory hypotheses ; (4) laws of variation—the influence of the environment, use and disuse, correlated variations, recent opinions, and the author's own theory. "Briefly stated, the view of evolution reached is that of definite variation, with progress essentially through the subordination of individual struggle and development to species-maintaining ends." This is illustrated in the arrest of vegetation by reproduction—in the origin of the flower, of shortened inflorescences, of hypogyny, of angiosperms, of grassy and orchid-like types, &c. "What we call higher or lower species or orders are the leaders or the laggards along one or other of these two lines of variation, the representatives of some stage of the predominance on one side of that oscillating balance between vegetative and reproductive processes which have long been known as the essential functions of organic life." Among animals the types of *Protozoa* are "not the empirically selected products of spontaneous variation among indefinite possibilities, but simply the predominatingly amœboid, encysted, and motile phases of the primeval cell-cycle, these three forms of which are fixed by the properties of protoplasm itself, each particular phase being fixed by the constitutional bias (diathesis) of its type towards anabolism or katabolism." "The greatest of all steps in morphological progress, that from the *Protozoa* to the *Metazoa*, is not due to the selection of the more individuated and highly-adapted forms, but to the union of rela-

tively unindividuated cells into an aggregate in which each becomes diminishingly competitive and increasingly subordinated to the whole. That increase of reproductive sacrifice which at once makes the Mammal and marks its essential stages of further progress (monotreme, marsupial, placental), that increase of parental care, that frequent appearance of sociality and co-operation which, even in its rudest forms, so surely secures the success of the species attaining it—be it mammal or bird, insect, or even worm—all these phenomena of the survival of the truly fittest, through love, sacrifice, and co-operation, need far other prominence than they could possibly receive on the hypothesis of the essential progress of the species through internecine struggle of its individuals at the margin of subsistence."

GEGENBAUR, C. Cänogenese. Verh. Anat. Ges. ii, in Anat. Anz. iii, pp. 493-499.

GIARD, A. Cours d'évolution des êtres organisés. Leçon d'ouverture. Rev. Sci. xlvii, pp. 689-699.

GULICK, J. T. Divergent Evolution through Cumulative Segregation. J. L. S. xx, pp. 189-274.

Cf. criticism by A. R. WALLACE, Nature, xxxviii, pp. 490 & 491.

The conditions and effects of segregation. "Separation without a difference in external circumstances is a condition sufficient to insure divergence in type." There is "a law rising out of the very nature of organic activities, a law of segregation, bringing together forms similarly endowed, and separating them from their neighbours." "Cumulative segregation produces accumulated divergence; and accumulated divergence produces permanent segregation; and the segregate subdivision of those permanently segregated produces the divisions and subdivisions of organic phyla." All this happens "without any selection in the sense that natural selection is selection." Analysis (with wealth of terminology) of the various kinds of segregation: (A) *Environmental*—industrial, choral, spatial, fertilizational, artificial (with subdivisions); (B) *Reflexive*—conjunctural, impregnational, and institutional; (C) *Intensive*—with eight subdivisions.

— Divergent Evolution. Letter to Nature, xxxix, 994, pp. 54 & 55.

*GRESSWELL, G. Examination of the Theory of Evolution and some of its implications. London: 8vo, 170 pp.

*H. A. S. Darwin and his Works; a Biological and Metaphysical Study. London: 8vo, 84 pp.

*HEILPRIN, A. The Geological Evidences of Evolution: a popular exposition of facts bearing upon the Darwinian theory. Philadelphia: 8vo.

HERDMAN, W. A. The Utility of Specific Characters. Nature, xxxix, 1000, pp. 200 & 201.

"In the *Tunicata*, at least, specific characters are of actual importance to their possessors, and are adaptive modifications such as would be produced by the action of natural selection."

HUXLEY, T. H. Obituary Notice of Charles Darwin. *P. R. Soc.* xliv, pp. i-xxv.

—. *The Struggle for Existence: a Programme.* Nineteenth Cent. xxiii, pp. 161-180.

HYATT, A. Values in Classification of the Stages of Growth and Decline, with propositions for a new nomenclature. *P. Bost. Soc.* xxiii, 3, pp. 396-408; *Science*, xi, 260, pp. 41 & 42.

*JOLY, —. *La Especie organica; las Formas transitorias de las Especies.* Madrid: 8vo, 117 pp.

LANKESTER, E. RAY. Article, "Zoology." *Encycl. Brit.* vol. xxiv, pp. 799-820.

Some discussion of current evolutionist opinions.

—. *Prophetic Germs.* *Letters to Nature*, xxxviii, 988, pp. 539 & 540; 990, p. 588; 992, p. 7.

*LE CONTE, J. *Evolution, and its relation to religious thought.* London: 8vo, 358 pp.

MERRIAM, C. HART. *Species and Subspecies.* *Letter to Science*, xii, 305, p. 279.

"The only difference between species and subspecies is that in one case the intergrades exist, in the other they have become extinct."

MIVART, ST. GEORGE. *Natural Selection and Useless Structures.* *Letter to Nature*, xxxix, 997, p. 127.

MORGAN, C. LLOYD. *Elimination and Selection.* *P. Bristol Soc.* v, pp. 13.

"Variations are subjected to a double process—a process of elimination, weeding out the unfit; and a process of selection, choosing out the more fit. Of these, elimination is the more universal, selection only coming into play when intelligence has definitely appeared on the scene of life."

—. *Natural Selection and Elimination.* *Nature*, xxxviii, 981, p. 370.

Abstract of former.

*MORRIS, C. *Intelligent Selection.* *Am. Nat.* xxii, pp. 145-150.

Nature, xxxviii, 981, p. 364; 982, pp. 387 & 388; 983, pp. 411 & 412; 984, p. 434; 986, p. 490.

Functionless Organs, Lamarckism versus Darwinism, &c. Letters by E. RAY LANKESTER, J. T. HURST, G. J. ROMANES, J. BURDON SANDERSON, S. F. WILSON, E. B. POULTON, A. MELDOLA, ARGYLL, J. J. MURPHY, W. WHITE.

PACKARD, A. S. *On certain Factors of Evolution.* *Am. Nat.* xxii, pp. 808-821.

"Natural selection" expresses rather the result of a series of causes, than a *vera causa* in itself. In the evolution of cave forms the author emphasizes: (1) the change of environment—twilight, darkness, dimi-

nition of food, &c.; (2) disuse of certain organs; (3) adaptation of more plastic forms; (4) isolation preventing crossing with out-of-door forms; (5) heredity; and argues on behalf of "neo-Lamarckism."

PERRIER, E. *Le Transformisme*. Paris: 16mo, 320 pp., 100 figs.

POWELL, J. W. *The Three Methods of Evolution*. *Smiths. Misc. Coll.*; *Bull. Phil. Soc. Wash.* vol. xxxiii, pp. xxxvii-lii.

Physical evolution—the result of direct adaptation to environment, under the law that motion is in the direction of least resistance. Biotic evolution—the result of indirect adaptation to the environment by the survival of the fittest in the struggle for existence. Anthropic evolution—by endeavour.

QUATREFAGES, A. DE. *Le transformisme, la philosophie et le dogme*. *Rev. Sci.* xli, pp. 609-616.

*RENOUZ, C. *L'évolution de l'homme et des animaux. Histoire positive du développement primitif démontrée par le développement embryonnaire*. Fasc. i. Paris: 8vo, 68 pp., 1 pl., figs.

RILEY, C. V. *On the Causes of Variation in Organic Forms*. *Abstr. of an Address at Am. Ass. for Adv. of Sc.* 1888. *Science*, xii, 293, pp. 123-125.

A statement of the case.

ROMANES, G. J. *Recent Critics of Darwinism*. *Contemp. Rev.* liii, pp. 836-854.

——. *Definition of the Theory of Natural Selection*. *Letter to Nature*, xxxviii, 991, pp. 616-618.

——. *Mr. Dyer on Physiological Selection*. *Letter to Nature*, xxxix, 966, pp. 103 & 104.

——. *Natural Selection and the Origin of Species*. *Letter to Nature*, xxxix, 999, pp. 172-175.

SPENCER, H. *A Counter Criticism*. *Nineteenth Cent.* xxiii, pp. 207-215. [*Cf.* ARGYLL.]

STAHL, E. *Pflanzen und Schnecken. Eine biologische Studie über die Schutzmittel der Pflanzen gegen Schneckenfrass*. *Jen. Z. Nat.* xxii, pp. 557-681.

Interesting as a detailed application of the Darwinian principle.

THOMSON, J. A. [*See Environment.*]

Environmental variation in its relation to function and organism.

TODD, J. E. *Directive Coloration in Animals*. *Am. Nat.* xii, pp. 201-207.

VIRCHOW, R. *Ueber den Transformismus*. *Arch. f. Anthrop.* xviii, pp. 1-15.

WALLACE, A. R. *Mr. Gulick on Divergent Evolution*. *Letter to Nature*, xxxviii, 986, pp. 490-491.

2. *Environment.*

ADERHOLD, R. Beitrag zur Kenntniss richtender Kräfte bei der Bewegung niederer Organismen. Jen. Z. Nat. xxii, pp. 310-342.

Experiments with *Euglena viridis* and the like, on the presence or absence of "Geotaxy," on the influence of light, &c.

AMANS, P. C. Comparaisons des organes de la locomotion aquatique. Ann. Sci. Nat. vi, pp. 1-164, 6 pls.

BORDIER, A. Les microbes et le transformisme. Bull. Soc. Anthropol. Par. xi, 4, pp. 743-779.

Instances of environmental variations.

*CHUN, C. Die pelagische Thierwelt in grösseren Meerestiefen und ihre Beziehungen zu der Oberflächenfauna. Biblioth. Zool. Heft 1. Cassel: 4to, 72 pp., 5 pls.

GIARD, A. Sur la castration parasitaire chez les Eukyphotes des genres *Palamon* et *Hippolyte*. C.R. cvi, pp. 502-505.

GRIFFITHS, G. C., & WHITE, W. Experiments upon the Colour-relation between the Pupæ of *Pieris rapæ* and their immediate surroundings, by G. C. Griffiths; described and summarised by W. White. Tr. Ent. Soc. pt. ii, pp. 247-267.

GUERNE, J. DE. Remarques au sujet de l'*Orchestia Chevreuxi* et de l'adaptation des amphipodes à la vie terrestre. Bull. Soc. Z. Fr. xiii (2) pp. 59-66, 8 figs.

HASWELL, W. A. On *Sacculina* infesting Australian Crabs. P. Linn. Soc. N.S.W. iii (4) pp. 1711 & 1712.

Males externally modified by the parasites so as to appear like females.

HERRICK, F. H. The abbreviated metamorphosis of *Alpheus*, and its relation to the conditions of life. J. Hopk. Univ. Circ. vii, pp. 34 & 35.

KINGSLEY, J. S. Caves and Cave Life. Am. Nat. xxii, pp. 1104-1106.

LANG, A. Ueber den Einfluss der festsitzenden Lebensweise auf die Thiere und über den Ursprung der ungeschlechtlichen Fortpflanzung durch Theilung und Knospung. Jena: 8vo, 166 pp.

A valuable discussion of the results associated with sedentary life.

LO BIANCO, S. Notizie biologiche riguardanti specialmente il periodo di maturità sessuale degli animali del golfo di Napoli. MT. z. Stat. Neap. viii, pp. 385-440.

LOEB, J. Der Einfluss des Lichtes auf die Oxydationsvorgänge in thierischen Organismen. Arch. ges. Phys. xlii, pp. 393-407.

Experiments with pupæ to test the influence of light on the processes of oxidation within the organism.

LUCAS, A. H. S. On the Production of Colour in Birds' Eggs. Tr. R. Soc. Vict. xxiv, pp. 52-60.

The protective value of coloration. The author considers that the influence of the surroundings, during the time of the formation of the shell, upon the mental or nervous constitution of the mother bird, is an important factor in determining the coloration.

LUCIANI, L., & PIUTTI, A. Arch. Ital. Biol. ix, pp. 319-358, 1 pl.

The influence of various environmental conditions on the respiratory phenomena of the ova of *Bombyx mori*.

RITZEMA-BOS, J. Untersuchungen über *Tylenchus devastatrix*, Kühn. II. Mith. Biol. Centralbl. vii, 21, pp. 646-659.

The influence of low temperature in producing "latent life."

—. Aenderungen in der Nahrung bei einigen Säugetieren. *Op. cit.* viii, 15.

THOMSON, J. ARTHUR. Synthetic Summary of the Influence of the Environment upon the Organism. P. R. Phys. Soc. Edinb. ix, pp. 446-499.

An appendix to Semper's "Animal Life," with more recent researches; an analysis of the external factors; a classified review of the facts; the physiological and ætiological aspects of environmental influence.

WHITE, W. Colour-relation between Pupæ and their Surroundings. Tr. E. Soc. ii, pp. 247-267.

Experiments by G. C. Griffiths, independently corroborating Poulton's results.

3. *Heredity.*

BONNET, R. Die stummelschwänzigen Huude im Hinblick auf die Vererbung erworbener Eigenschaften. Verh. Anat. Ges. ii, in Anat. Anz. iii, pp. 584-606. [*Cf.* Beitr. path. Anat. (Ziegler and Nauwerck) iv, pp. 69-92.]

Clearly shows the necessity of caution in using such cases as arguments for or against Weismann's position. Apparently transmitted curtailing the result of an excessive progress in a normal tendency to reduction of the caudal vertebræ.

BOULENGER, G. A. On the Scaling of the Reproduced Tail in Lizards. P. Z. S. iii, pp. 351-353.

The aberrant scaling of the reproduced tail is a reversion to an ancestral form.

BOVERI, TH. Zellen-Studien. Heft. II. Jen. Z. Nat. xxii, pp. 685-882, 5 pls.

Of the four chromatin loops observed in the division figure of the two first segmentation cells, it is probable that two are derived from the male (spermatozoon), and two from the female (ovum) nucleus.

BROCK, J. Einige ältere Autoren über die Vererbung erworbener Eigenschaften. *Biol. Centralbl.* vii, 16, pp. 491-499.

An important historical paper, noting the opinions of Aristotle, Blumenbach, Kant, &c.

COCKERELL, T. D. A. Letter containing Remarks on Atavism. *P. Z. S.* pt. 2, p. 219.

EIMER, G. H. T. [See Evolution.]

The author strongly maintains the inheritance of individually acquired characters, arguing against Weismann's position.

°DETMER, W. Zum Problem der Vererbung. *Tiermed. Rundschau*, Halle, ii, pp. 121-124.

DINGFELDER, J. Beitrag zur Vererbung erworbener Eigenschaften. *Biol. Centralbl.* viii, 7, pp. 210-217.

Instances of curtailing, wounds, acquired habits, &c., the results of which seem to be transmissible.

DÖDERLEIN, L. Ueber schwanzlose Katzen. *Op. cit.* vii, pp. 720 & 721. [Cf. *Zool. Anz.* x, p. 265.]

°DOLLINGER, G. Sind angeborene und später erworbene Verkrümmungen erblich? (Hungarian). *Orvosi hetil.* Budapest, xxxi (1887), pp. 1129-1134.

°——. Wie verhält sich die Vererbung des angeborenen Klumpfußes zur Weismann-Ziegler'schen Theorie der Vererbung. *Wien. med. Wochenschr.* xxxvii, 1887, Nos. 48 & 49.

FACKENHEIM, J. Ueber einen Fall von hereditärer Polydaktylie mit gleichzeitig erblicher Zahnanomalie. *Jen. Z. Nat.* xxii, pp. 343-385, 7 cuts.

FAUSSEK, V. Ueber die embryonale Entwicklung der Geschlechtsorgane bei der Afterspinne (*Phalangium*). *Biol. Centralbl.* viii, 12, pp. 359-363.

A new case of extremely early differentiation of the reproductive cells.

FELKIN, R. W. Heredity : its Influence on Man in Health and Disease. *Edin. Health Lectures*, viii. *Edin.* : 8vo, pp. 55-72.

GIARD, A. [See Environment.] *C.R.* cvi, pp. 502-505.

Castrating modifications are not indelible, for in male *Paguri*, freed from their parasites, the male characteristics gradually reappeared with successive moults.

HAACKE, W. Das Endergebnis aus Weismann's Schrift "Ueber die Zahl der Richtungskörper und über ihre Bedeutung für die Vererbung." *Biol. Centralbl.* viii, 9, pp. 282-287.

——. Zur Erläuterung meines Artikels über Weismann's Richtungskörpertheorie. *Op. cit.* viii, 11, pp. 330-332.

HOFFMAN, H. Vererbung erworbener Eigenschaften. *Op. cit.* vii, 21, p. 667. [Cf. *Bot. Z.* 1887, pp. 260 & 772.]

Instances from plants and animals of the apparent transmission of individually acquired characters.

KHAWKINE, M.-W. Le Principe de l'hérédité et les lois de la mécanique en application à la morphologie de cellules solitaires. Arch. Z. expér. (2) vi, 1, pp. 1-20.

The physico-mechanical conditions which underlie the "law of heredity" in the restoration of the normal form of *Paramæcium* after division.

LANE, W. ARBUTHNOT. Can the existence of a tendency to change in the form of the skeleton of the parent result in the actuality of that change in the offspring? J. Anat. xxii, pt. 2, pp. 215-225.

LANKESTER, E. RAY. Article "Zoology." Encycl. Brit. xxiv, pp. 799-820.

Corroboration of Weismann's position.

LEYDIG, F. Beiträge zur Kenntniss des thierischen Eies im unbefruchteten Zustande. Zool. Jahrb. iii, 2, pp. 287-432, 7 pls.

Some notes on heredity: e.g., "no sharp distinction can be drawn between germinal and somatic cells."

MCKENDRICK, J. G. [See Cell.]

Some arguments against Weismann's position.

MITCHELL, P. CHALMERS. Weismann on Heredity. Summary of "Über die Vererbung" (Jena: 1884). Nature, xxxvii, 972, pp. 156 & 157.

NEHRING, A. Ueber die Gebiassentwicklung der Schweine, insbesondere über Verfrühungen und Verspätungen derselben, nebst Bemerkungen über die Schädelform frühreifer und spätreifer Schweine. Berlin: [Review by M. WILCKENS, Biol. Centralbl. viii, 8, pp. 237-240.]

Apparent instances of inheritance of acquired characters.

NEUBAUM, M. Ueber Vererbung. Bonn: 8vo, 23 pp.

The homology of the germinal cells, their early differentiation and relative isolation, the fact of germinal continuity, the question of the transmission of acquired characters. "The constancy of the species depends upon the uninterrupted descent (Jaeger's continuity of the germinal plasma); variability depends upon the interaction of intrinsic and extrinsic forces."

RICHTER, W. Zur Vererbung erworbener Eigenschaften. Biol. Centralbl. vii, 22, pp. 673-679.

Mainly discussing the occurrence of curtailed dogs and cats. The spontaneous occurrence of this variation renders cases of its apparent transmission unreliable.

—. Zur Vererbung erworbener Charactero. Op. cit. viii, 10, pp. 289-301.

On the non-inheritance of mutilations and the like; conclusion in favour of Weismann's view.

ROUX, W. Beiträge zur Entwicklungsmekank des Embryo. Ueber die künstliche Hervorbringung halber Embryonen durch Zerstörung einer der beiden ersten Furchungskugeln, sowie über die Nachentwicklung (Postgeneration) der fehlenden Körperhälfte. Virchow's Archiv. cxiv, pp. 113-154 & 246-291, 2 pls.

SCHIESS, H. Uebertragung erworbener Eigenschaften. *Biol. Centralbl.* viii, 1, pp. 26-28.

Statistics showing inheritance of myopia.

SCHILLER TIETZ. Vererbung erworbener Eigenschaften. *Op. cit.* viii, 5, pp. 155-157.

Discussing tailless cats, and the transmission or non-transmission of modifications among domesticated animals.

°SPELTER, P. Die Vererbung von Krankheiten und Missbildungen des menschlichen Körpers. Neuwied: 8vo, viii & 29 pp., 1 pl.

THOMSON, J. A. [See Environment.]

Discussion of Weismann's position in regard to the transmission of modifications produced by the environment.

VIRCHOW, R., along with HARTMANN, DÖNITZ, MÖNCH, JOEST. Forterben von Schwanzverstümmelungen bei Katzen. *Verh. Berl. Ges. Anthropol.* (1887), pp. 724-726.

WEISMANN, A. Botanische Beweise für eine Vererbung erworbener Eigenschaften. *Biol. Centralbl.* viii, 3, pp. 65-79; 4, pp. 97-109.

Discussion of the alleged botanical evidence (Detmer and Hoffmann) in favour of the inheritance of acquired characters. Detmer's cases do not warrant his conclusion; Hoffmann's are secondary variations in consequence of primary germinal ones. The author's previous conclusions reaffirmed.

°WINDLE, BERTRAM. Congenital Malformations and Heredity. *P. Birm. Phil. Soc.* vi, 1.

ZACHARIAS, O. Zur Frage der Vererbung von Traumatismen. *Anat. Anz.* iii, pp. 373-379; *Biol. Centralbl.* viii, 7, pp. 204-210.

Notice and criticism of alleged cases of the inheritance of the results of wounds.

——. Das Forterben von Schwanzverstümmelungen bei Katzen. *Biol. Centralbl.* viii, 8, pp. 235-237.

(c.) SPECIAL SUBJECTS.

1. *Protoplasm and the Cell (not including the histology of tissues).*

ARNOLD, J. Weitere Mittheilungen über Kern- und Zelltheilungen in der Milz; zugleich ein Beitrag zur Kenntniss der von der typischen Mitose abweichenden Kerntheilungsvorgänge. *Arch. mikr. Anat.* xxxi, 4, pp. 541-564, 3 pls.

The agreement and difference between mitosis proper and indirect fragmentation.

BALBIANI, E. G. Recherches expérimentales sur la mérotomie des Infusoires ciliés. Contribution à l'étude du rôle physiologique du noyau cellulaire. 1 Partie. Rec. Z. Suisse, v, 1, pp. 1-72, 2 pls.

°BOKORNY, TH. Ein chemischer Unterschied zwischen lebendem und totem Protoplasma. J. Ber. Ver. Rheinpfalz, 1888, p. 143.

— [See LÆW, O.]

BOVERI, TH. Zellen Studien. Heft. 1. Die Bildung der Richtungskörper bei *Ascaris megalocephala* und *Ascaris lumbricoides*. Biol. Centralbl. viii, 1, pp. 17-19; cf. 1887.

Cf. Review of Boveri's work by O. ZACHARIAS.

BRINCK, J. Ueber synthetische Wirkung lebender Zellen. Z. Biol. vii, 4, pp. 453-474.

°BROWN, F. W. A Course in Animal Histology. II. Cells and Inter-cellular Substances. Microscope, viii, pp. 113-116, 145-147, 177-180, 201-203, & 244-246.

BRUYNE, C. DE. Contribution à l'étude de la vacuole pulsatile. Bull. Ac. Belg. xv, 5, pp. 718-749, 1 pl.

See *Protozoa*. No communication with exterior, not excretory, probably respiratory and circulatory, with nutritive contents.

BÜTSCHLI, O. Müssen wir ein Wachstum des Plasmas durch Intussusception annehmen? Biol. Centralbl. viii, 6, pp. 161-164.

New particles may be apposed to fine threads of the plasmic network.

°CHABRY, L. Production expérimentale de la segmentation cellulaire bornée au noyau. C.R. Soc. Biol. v, pp. 589-591.

°CONN, H. W. Cells and Protoplasm. Am. Micr. J. ix, pp. 147-149.

CUENOT, L. Sur le développement des globules rouges du sang. C.R. cvi, pp. 673-675.

DALLINGER, W. H. The President's Address. J. R. Micr. Soc. 1888, pp. 177-185.

Putrefactive organisms. The constancy of life-cycles.

ERRERA, L. Ueber Zellenformen und Seifenblasen. Biol. Centralbl. vii, 22, pp. 728-731. (60 Vers. deut. Naturf. 1887.)

Mechanics of the cell. Cellular statics compared with those of soap-bubbles. At the moment of appearance the cell-membrane is extremely thin, plastic, and changeable. Like similar fluid lamellæ, it tends to assume that form which would be taken by a weightless fluid lamella under the same conditions, and to exhibit a minimal surface and constant curvature. Thirteen general conclusions.

°— Mouvement protoplasmique et tension superficielle. Bull. Soc. Belg. Micr. 1887-88, pp. 43-46.

FROMMANN, C. Ueber Beschaffenheit und Umwandlungen der Membran, des Protoplasma, und des Kerns von Pflanzenzellen. Jen. Z. Nat. xxii, pp. 47-174, 5 pls.

Dealing with vegetable cells, but of general import.

1888. [VOL. XXV.]

*GEDOELST, L. Les progrès de la biologie cellulaire depuis 1868. Extrait du C.R. Congrès bibliographique internat. à Paris. Paris : 8vo, 21 pp.

GROBBEN, C. Ueber die Bedeutung des Zellkerns. SB. z.-b. Wien, xxxviii, pp. 16-34.

HARTOG, M. M. On Adelphotaxy : an undescribed Form of Irritability. Rep. Brit. Ass. lviii, p. 702.

Tendency of spontaneously mobile cells to assume definite positions with regard to their fellows.

— Preliminary Note on the Functions and Homologies of the Contractile Vacuole in Plants and Animals. Rep. Brit. Ass. lviii, pp. 714-716.

The contractile vacuole has the function of preventing excessive vacuolation and diffuence of naked cells in water.

HENKING, H. [See Oogenesis.]

HERMANN, F. Ueber regressive Metamorphosen des Zellenkerns. Anat. Anz. iii, pp. 58-62.

The active share of the nucleus in secretion.

IDE, M. La membrane des cellules du corps muqueux de Malpighi. Cellule, iv, pp. 403-433, 1 pl.

The cellular membrane and intercellular bridges.

KHAWKINE, M.-W. [See Heredity.]

*KLEBS, E. Die Bildung des Kern-Chromatins. Fortschritte d. Med. vi, pp. 906-909.

KORSCHOLT, E.—G. HABERLANDT. Ueber die Beziehungen zwischen Funktion und Lage des Zellkerns bei den Pflanzen. Jena : 1887. Nebst eignen Mittheilungen. Biol. Centralbl. viii, 4, pp. 110-118, 8 figs.

Review of Haberlandt's work, with observations by Korschelt on the share of the nucleus in the activity of the cell.

KÜHNE, W. On the Origin and Causation of Vital Movement. (Croonian Lecture.) Nature, xxxviii, 991, pp. 627-699.

KUNSTLER, J. Les éléments vésiculaires du protoplasme chez les Protozoaires. C.R. cvi, pp. 1684-1686.

— Structures vacuolaires et aréolaires. Bull. Soc. Z. Fr. xiii (7) pp. 166 & 167.

*LAULANIE, F. Étude critique et expérimentale sur les cellules géantes normales et pathologiques. Lyon : 4to, 139 pp.

LEYDIG, F. Altes und Neues über Zellen und Gewebe. Zool. Anz. xi, pp. 254-259, 274-280, 309-315, & 328-333.

Cells : (1) Spongioplasma and Hyaloplasma ; (2) the cavity round the nucleus ; (3) nuclei, minus membrane ; (4) cuticular modifications within the cell. Tissues : Cuticular tissue, its fibrous structure, origin, relation to connective tissue, muscular tissue, nervous tissue.

LEW, O., & BOKORNY, TH. Die chemische Beschaffenheit des protoplasmatischen Eiweisses, nach dem gegenwärtigen Stand der Untersuchungen von O. Löw und Th. Bokorny. Biol. Centralbl. viii, 1, pp. 1-8.

By further studies the authors confirm their original conclusion that "living protoplasm (or the albumen therein) is chemically different from the dead substance; the chemical difference consists, in all probability, in the presence of aldehyde groups in the molecule of the living protoplasmic albumen."

LUKJANOW, S. M. Ueber eine eigenthümliche Kolbenform des Kernkörperchens. Arch. mikr. Anat. xxxii (3) pp. 474-478, 1 pl.

MAUPAS, E. [See Sex and Reproduction.]

Important observations on the rôle of the nuclear elements, and their senile degeneration when conjugation is prevented.

McKENDRICK, J. G. On the Modern Cell Theory and the Phenomena of Fecundation. P. Phil. Soc. Glasg. xix, pp. 71-125, 34 figs.

Cf. Textbook of General Physiology. [See General.]

VAN DER MENSBRUGGHE, G. Sur la tension superficielle. Bull. Soc. Belg. Micr. 1887-88, pp. 78-90.

METSCHNIKOFF, E. Ueber die phagocytaire Rolle der Tuberkelriesenzellen. Virchow's Archiv. cxiii, pp. 63-95, 2 pls.

MICHEL, A. C.R. cvi, pp. 1555-1558.

An inquiry into the formation of plasmodia and pseudo-plasmodia.

NANSEN, F. Die Struktur und wechselseitige Beziehung der histologischen Elemente des Zentralnervensystems. Report by OBERSTEIN, Biol. Centralbl. viii, 3, pp. 93-96.

NISSL, —. Ueber den Zusammenhang der Zellstruktur mit der Zellfunction in der centralen Nervenzelle. 61. Vers. deut. Naturf. Köln. Internat. Klin. Rundschau, ii, 43.

PLATNER, G. Kern und Protoplasma. Akad. Habilitationsschrift. Breslau: 8vo, 31 pp.

QUINCKE, G. Ueber Protoplasmaabewegung. Biol. Centralbl. viii, 16, pp. 499-506.

An attempt to explain the movements of protoplasm in the cells of plants and in *Protozoa*, by comparing them to the movements observed at the contact surfaces of various fluids.

SCHOTTLÄNDER, J. Ueber Kern- und Zelltheilungsvorgänge in dem Endothel der entzündeten Hornhaut. Arch. mikr. Anat. xxxi, 3, pp. 426-482, 1 pl., 6 figs.

SCHÜTZENBERGER, P. Recherches sur la synthèse des matières albuminoïdes et protéiques. C.R. cvi, pp. 1407-1410.

STEINHAUS, J. Les métamorphoses et la gemmation indirecte des noyaux dans l'épithélium intestinal de la *Salamandra maculosa*. Arch. Phys. xx, pp. 60-70, 2 pls.

STRASBURGER, E. *Histologische Beiträge. Heft 1. Ueber Kern- und Zellteilung im Pflanzenreiche, nebst einem Anhang über Befruchtung.* Jena: 8vo, xviii & 258 pp., 3 pls.

For summary, see *Nature*, xxxix, No. 992, pp. 4-6.

WALDEYER, W. *Ueber Karyokinese und ihre Beziehungen zu den Befruchtungsvorgängen.* *Arch. mikr. Anat.* xxxii, pp. 1-122, 14 figs.

An account of the history of research on cell-division, with critical summaries.

——. *Ueber Karyokinese und ihre Beziehungen zu den Befruchtungsvorgängen.* Bonn: 8vo, 122 pp., 14 figs.

Review, *Biol. Centralbl.* vii, pp. 718-720.

WHITMAN, C. O. *The Seat of formative and regenerative Energy.* *J. Morph.* ii, 1, pp. 27-49.

The activity of the protoplasm as well as of the nucleus. The organism as a whole controls the formative processes going on in each part.

*ZACHARIAS, E. *Ueber Kern- und Zellteilung.* *Bot. Z.* xvi, 3, 4.

ZACHARIAS, O. *Ueber Pseudopodien und Geisseln.* *Biol. Centralbl.* viii, 18, pp. 548 & 549.

The transition from pseudopodia to cilia. *Cf.* A. GRUBER, *Ueber einige Rhizopoden aus dem Genueser Hafen.* Freiburg i. Br., 1888.

2. *Oogenesis. (Including the origin, maturation, and fertilisation of the ovum.)*

BEDDARD, F. E. *On the structure of the Graafian Follicle in Didelphys.* *P. R. Phys. Soc. Edinb.* ix, 3, pp. 407-412.

VAN BENEDEN, E. *Sur la fécondation chez l'Ascaride mégalocephale (Rectification).* *Anat. Anz.* iii, p. 104.

BLOCHMANN, F. *Bemerkungen zu den Publikationen über die Richtungskörper bei parthenogenetisch sich entwickelnden Eiern.* *Morph. JB.* xiii, pp. 654-663.

BÖHM, A. A. *Ueber Reifung und Befruchtung des Eies von Petromyzon planeri.* *Arch. mikr. Anat.* xxxii, pp. 613-670, 2 pls.

The anatomy and histology of the ovary; the maturation of the ova: the transitional "lid" of A. Müller; the cup-like expansion of the germinal vesicle to form the "pole-plasma." Several spermatozoa enter, and only at the cupola of the animal pole of the ovum. Only one really penetrates into the ovum, but the others persist, for a time, in a space beneath the cupola. The formation of the two polar bodies. The details of fertilisation are described.

BORN, G. *Ueber die Furchung des Eies bei Doppelbildungen.* *J. Ber. schles. Ges.* lxx, pp. 79-90.

Conditions of segmentation in ova which give rise to double monsters.

BOVERI, TH. Zellen Studien. Heft II. Jen. Z. Nat. xxii, pp. 685-882, 5 pls.

Summary, J. R. Micr. Soc. 1889, ii, pp. 220-223. Review by O. ZACHARIAS, Biol. Centralbl. viii, 18, pp. 545-548. Review by O. ZACHARIAS, of former Heft (see 1887), Biol. Centralbl. viii, pp. 17-19.

There is no special "bouchon d'impregnation," nor micropyle. Polyspermy is very rare, and only occurs when the ova are weak. Carnoy's type of ovum (with two chromatin elements) is always fertilized by a spermatozoon with two chromatin elements, and there is a similar correspondence when the ovum contains only one chromatin element (in van Beneden's type). The nuclei of ovum and spermatozoon are followed till they form the first segmentation spindle. The entire achromatin spindle-figure is due to the cell-substance. The cell-substance consists of a homogeneous matrix and a fine network, between the meshes of which lies, *inter alia*, a specific granular or filamentous substance—the archoplasma. The archoplasmic threads centred in protoplasmic centrosomata or central corpuscles behave like muscle-fibrils. "The movement of the nuclear elements is solely and wholly the result of the contraction of the attached fibrils, and their final arrangement into an equatorial plate is the result of the equal action of the two archoplasmic spheres exerted through the said fibrils." The equatorial plate stage is a condition of rest, *par excellence*, in the life of the cell. It is interrupted by the action of a new factor—the longitudinal splitting of the chromatin elements. The author seeks to justify his regarding this as "an independent expression of life, a reproductive act in the chromatin elements."

—. Ueber den Anteil des Spermatozoon an der Teilung des Eies. SB. Ges. Morph. iii, pp. 151-164.

°. —. Ueber den Anteil des Spermatozoon an der Teilung des Eies. Münchener med. Wochenschr. xxxv, 10, p. 172, also Nos. 14 & 15.

°. —. Ueber partielle Befruchtung. *Op. cit.* xxxv, pp. 570-572 & 613.

CUNNINGHAM, J. T. Remarks on some Teleostean Ova and their Development. Rep. Brit. Ass. lviii, pp. 703 & 704.

° DETMER, W. Ueber Richtungskörper. Humboldt, vii, 3, pp. 107 & 108.

DOSTOIEWSKY, A. Eine Bemerkung zur Furchung der Eier der *Ascaris megalocephala*. Anat. Anz. iii, pp. 646-648.

FAUSSEK, V. Ueber die embryonale Entwicklung der Geschlechtsorgane bei den Afterspinne (*Phalangium*). Biol. Centralbl. viii, 12, pp. 359-363.

The reproductive cells in all probability originate directly from the yolk-cells, and afford another instance of early insulation from the general somatic cells.

FIEDLER, K. Ueber Ei- und Samenbildung bei *Spongilla fluviatilis*. Z. wiss. Zool. xlvii, 1, pp. 85-128, 2 pls.

History of the ovum, and its follicle of appressed adjacent cells. The peripheral migration of the nucleus in maturation; the spindle figures not yet observed.

FLEISCHMANN, A. Die Entwicklung des Eies von *Echinocardium cordatum*. *Op. cit.* xlv, 2, pp. 131-142, 1 pl.

Discussing especially the segmentation.

GARNAULT, P. Recherches sur la structure et le développement de l'œuf et de son follicule chez les Chitonides. *Arch. Z. expér.* (2) vi, 1, pp. 83-116, 2 pls.

Ovum arises from germinal epithelium lining ovary; its only membrane is formed from the modification of sister-cells; the inclosing vitelline masses do not take part in forming the nuclei of the membrane; the expansion and contraction of the vitelline masses—the highest known expression of amoeboid activity in the ovum.

—. Sur la structure des organes génitaux, l'ovogénèse et les premiers stades de la fécondation chez l'*Helix aspersa*. *C.R.* cvi, pp. 675-678.

Some minute anatomy. The follicle formed from the cells of the germinal epithelium. Polar globule formation described. The spermatozoon penetrates the ovum at a vitelline expansion or cone of attraction.

—. Sur la signification des globules polaires d'après Weismann. *Rev. Sci.* xlii, pp. 576-578.

—. Sur les phénomènes de la fécondation chez l'*Helix aspersa* et l'*Arion empiricorum*. *Zool. Anz.* xi, pp. 731-736.

°. Contribution à l'étude de la morphologie de l'œuf et du follicule. *Gaz. heb. sc. med. Bordeaux*, ix, pp. 392-394.

°. Sur la structure et le développement de l'œuf et de son follicule. *Act. Soc. L. Bord.* xli, pp. 16, 17, 73, & 74.

HAACKE, W. [See WEISMANN, A., and Heredity.]

HENKING, H. Die ersten Entwicklungsvorgänge im Fliegenei und freie Kernbildung. *Z. wiss. Zool.* xlv, pp. 289-337, 4 pls., 3 cuts.

Especial reference to free nuclear formation. The history of the nutrient cells. A few observations on polar globules. In most cases of fertilisation four spermatozoa seem to enter the ovum, but the supernumeraries break up.

HERTWIG, O. [See General.]

HERTWIG, R. Weitere Versuche über Bastardirung und Polyspermie. *SB. Ges. Morph.* iv, pp. 10-13. [*Cf. Münchener med. Wochenschr.* xxxv, 13.]

HICKSON, S. J. On the Sexual Cells and Early Stages in the Development of *Millepora plicata*. *Phil. Trans.* clxxix, B, pp. 193-204, 2 pls.

Both male and female elements arise in the ectoderm of the coenosarc canal, but migrate into the endoderm. The subsequent modifications; the apparently active agency of the spermatoblasts in the formation of sporosacs; the pseudopodial stalk of the ovum; the formation of two polar globules; the process of fertilisation; the apparent outward migration of nuclear elements in the fertilised ovum; &c.

HOFFMANN, C. K. Ueber den Ursprung und die Bedeutung der sogenannten "freien" Kerne in dem Nahrungsdotter bei den Knochenfischen. Z. wiss. Zool. xlv, 4, pp. 517-548, 1 pl.

ISCHIKAWA, C. Ueber die Herkunft der weiblichen Geschlechtszellen bei *Podocoryne carnea*, Sara. Z. wiss. Zool. xlvii, 4, pp. 621-625, 6 figs.

— [See WEISMANN, A.]

KASTSCHENKO, N. Zur Frago über die Herkunft der Dotterkerne im Selachierei. Anat. Anz. iii, pp. 253-257, 1 pl.

Several nuclei in unsegmented egg.

KOROTNEFF, A. DE. Contribution à l'études des Hydrasires. Arch. Z. expér. vi, pp. 21-31, 2 pls.

The ovum of *Myriothele* arises from a primordial cell of ectodermic origin, which gives origin to over twenty secondary germinal elements. One of these forms the germinal vesicle, the others disappear, but form the formative plasma, while the nuclei of vitelline cells afford a third nutritive contribution to the common mass of the ovum. The male elements arise like the ova.

KORSCHOLT, E. Zur Bildung der Eihüllen, der Mikropylen, und Chorionanhängen in den Insekten. N. Acta Ac. L.-C. Nat. cur. li, pp. 183-252, 5 pls.

The formation of the chorion in insect ova is entirely similar to the formation of the cuticle in the adult skin. (Expression of adult diathesis in ovo.)

KULTSCHITZKY, N. Die Befruchtungsvorgänge bei *Ascaris megalocephala*. Arch. mikr. Anat. xxxi, 4, pp. 567-593, 2 pls.

— Ueber die Eireifung und die Befruchtungsvorgänge bei *Ascaris marginata*. Op. cit. xxxii, pp. 671-682, 2 pls.

Cf. Review by O. ZACHARIAS, Biol. Centralbl. viii, 12, p. 367.

— Ergebnisse einer Untersuchung über die Befruchtungsvorgänge bei *Ascaris megalocephala*. SB. Preuss. Akad. 1888, ii, iii, pp. 17-21.

(1) As to formation of polar bodies, agrees in the main with Boveri, but two achromatic spindle figures are seen lying beside one another. (2) Modifications of the spermatozoon. It does not seem as if the whole chromatin went to the formation of the male pronucleus. (3) The formation of two similar pronuclei, with originally very different components, shows that the process is something *sui generis*. (4) Three pronuclei may occur, perhaps due to the entrance of a binucleate spermatozoon. (5) The karyokinesis of each pronucleus is independent; fusion was not observed. (6) The essence of fertilisation consists in the process by which the sperm-nucleus—an element foreign to the ovum—is modified into an essentially inseparable element, a nucleus of the same.

LAMEERE, A. Sur des œufs anormaux de l'*Ascaris megalocephala*. Bull. Ac. Belg. xv, 6, pp. 980-984, 1 pl.

°LAULANIÉ, —. Sur l'origine commune et le rôle variable de l'épithélium germinatif et des cordons sexuels dans l'ovaire. C.R. Soc. Biol. v, 1.

LEYDIG, F. Beiträge zur Kenntniss des thierischen Eies im unbefruchteten Zustande. Zool. Jahrb. iii, 2, pp. 287-432, 7 pls.

I. Description of ova of worms, Crustaceans, spiders, myriopods, insects, fishes, amphibians, mammals. II. The origin of the ovum; the nucleus; the yolk; the vitelline membrane; the membrana granulosa; the follicular cells; the reproductive and somatic cells.

LIEBERMANN, —. Embryochemische Untersuchungen. Arch. ges. Phys. xliii, pp. 71-152, 3 figs.

(1) Some constituents of hens' eggs; (2) metabolism of egg during hatching; (3) chemistry of embryo.

LÖWENTHAL, N. Notiz über die Protoplasmastruktur der Kornzellen des Eierstockes. Anat. Anz. iii, pp. 65-68, 4 figs.

—. Zur Kenntniss des Keimfleckes im Uteri einiger Säuger. T. c. pp. 363-373, 7 figs.

McKENDRICK, J. G. [See Cell.]

NAGEL, W. Das menschliche Ei. Arch. mikr. Anat. xxxi, pp. 342-423, 2 pls.

The primordial ovum and primary follicle, the subsequent growth of these, and the conditions of maturity. In the mature ovum: (1) the epithelium; (2) the zona pellucida; (3) a perivitelline space; (4) a narrow, clear, cortical zone of the vitellus; (5) a broader, finely granular, protoplasmic zone; (6) a central deutoplasmic zone; and (7) the germinal vesicle and spot.

PLATNER, G. Die erste Entwicklung befruchteter und parthenogenetischer Eier von *Liparis dispar*. Biol. Centralbl. viii, 17, pp. 521-524.

In the parthenogenetic ova, two polar nuclei were formed, of which the first again divided.

ROUX, W. Zur Frage der Axenbestimmung des Embryo im Froschei. Op. cit. viii, 13, pp. 399-413.

RYDER, J. A. On the resemblance of the primitive *Foraminifera* and Ovarian Ova. P. Ac. Philad. 1888, p. 73.

STRASBURGER, E. [See Cell.]

°VEJDOWSKY, F. Entwicklungsgeschichtliche Untersuchungen. Heft 1. Reifung, Befruchtung, und die ersten Furchungsvorgänge des *Rhynchelmis*-Eies. Prag: 8vo, 166 pp., 10 pls., 7 cuts.

—. Also in Bohemian. Preisgekrönte Schriften. J. Ber. k. Böhm. Ges. Wiss. Prag: No. i, 154 pp., 10 pls.

VIRCHOW, H. Ueber die physikalisch zu erklärenden Erscheinungen, welche am Dotter des Hühnereies bei der mikroskopischen Untersuchung sichtbar werden. SB. Preuss. Akad. 1888, xxxvii, pp. 979-981.

WALDEYER, W. Ueber Karyokinese und ihre Beziehungen zu den Befruchtungsvorgängen. Arch. mikr. Anat. xxxii, pp. 1-122, 14 cuts.

A history of research on fertilisation, &c., with bibliography, from Martin Barry's observations (1840) to those of Boveri (1888).

WEISMANN, A. Ueber die Zahl der Richtungskörper und über ihre Bedeutung für die Vererbung. Jena: 1887, v & 75 pp. [Of. Zool. Rec. xxiv.] Biol. Centralbl. viii, 4, pp. 123 & 124.

Review by W. Haacke.

—, & ISCHIKAWA, C. Ueber die Bildung der Richtungskörper bei tierischen Eiern. Ber. Freiburg Ges. iii, pp. 1-44, pls. i-iv.

Cf. Biol. Centralbl. viii, 4, pp. 124-126. Review.

—, & —. Weitere Untersuchungen zum Zahlengesetz der Richtungskörper. Zool. Jahrb. iii, 3, pp. 575-610, 4 pls.

—, Das Zahlengesetz der Richtungskörper und seine Entdeckung. Morph. JB. xiv, pp. 490-506.

—, & — Ueber partielle Befruchtung. Ber. Freiburg Ges. iv, 1, pp. 51-53; cf. Nachtrag. Heft 2; Translation, Nature, xxxviii, pp. 329 & 330.

In *Moina para lora* it seemed as if a spermatozoon united not with the entire ovum, but with one of the four segmental cells; but this interpretation of the observed facts is withdrawn.

—, & —. Ueber die Befruchtungserscheinungen bei den Dauereiern von Daphniden. Biol. Centralbl. viii, 14, pp. 430-436.

The term "partielle Befruchtung" withdrawn, and replaced by "Neben-Kopulation."

° —. Ueber Zahl und Bedeutung der Richtungskörperchen. Naturforscher, xxxi, pp. 56 & 57.

WHITMAN, C. O. [See Cell.]

° —. The Eggs of *Amphibia*. Am. Nat. xxii, 261, p. 857.

ZACHARIAS, O. Ueber Abweichungen vom Typus bei Konjugation der Geschlechtskerne. Anat. Anz. iii, pp. 48-53.

—, Ueber die Bildung der Richtungskörper bei tierischen Eiern. T. c. pp. 401-403.

Report of recent researches.

—, Review of Th. Boveri. Zellen-Studien, Heft 1 (1887). Biol. Centralbl. viii, 1, pp. 17-19.

—, Zum Befruchtungsvorgänge bei *Ascaris megalocephala*. Op. cit. viii, 12, 367 pp.

On Kultschitzky's researches.

[ZACHARIAS, O.] Ueber partielle Befruchtung. *T. c.* p. 368.

— Die feinern Vorgänge bei der Befruchtung des tierischen Eies.
Op. cit. vii, 21, pp. 659–662.

Besides the normal process of fertilisation, it frequently happens in the ovum of *Ascaris* that the sperm-nucleus divides into two; each half unites with half of the female pronucleus, and each product of union assumes nuclear (pronucleus-like) form.

3. *Spermatogenesis.*

BALLOWITZ, E. Untersuchungen über die Struktur der Spermatozoen, zugleich ein Beitrag zur Lehre vom feinern Bau der kontraktilel Elemento. *Arch. mikr. Anat.* xxxii, pp. 401–473, 5 pls.

The minute structure described in detail: the structure of the lash, the fibrillar character of the axial filament, the development of the spiral fringe, the nature of the head.

°BERGONZINI, O. Contributo allo studio della spermatogenesi nei vertebrati. *La Rassegna sc. med.* Modena, iii, 7, pp. 337–344.

°—. Contribuzione allo studio della spermatogenesi. *Atti. Soc. Mod. Mem.* vii, pp. 62–69.

BIONDI, D. Ueber die Entwicklung der Samenfäden beim Menschen. *J. Ber. schles. Ges.* lxv, pp. 35–38.

BOLLES-LEE, A. La spermatogénèse chez les Chétognathes. *Cellule*, iv, 1, pp. 107–133, 2 pls.

“Polyplasta,” from division of original male and female cell, become free in coelome, completely segment into spermatocytes grouped round a blastophore. The ‘Nebenkern.’ Sperms have procephalic filament, tail, and undulatory membrane. In the “polyplast” the head is turned outwards, the accessory nuclear body inwards, or towards the blastophore.

°BRAZZOLO, FLORIANO. Recercho sulla istologia normale e patologica del testicolo: nota II, La cariocinesi nel testicolo normale. *Bologna*: 4to, 23 pp., 1 pl. (*Ex Mém. Acc. Bologn.* ix.)

VON EBNER, V. Zur Spermatogenese bei den Säugethieren. *Arch. mikr. Anat.* xxxi, pp. 236–292, 3 pls.

Resumption of the author's investigations of seventeen years ago. The history and terminology of the subject. The relation of the basal nuclei of the spermatoblasts to the cells of Sertoli and the spermatogonia of v. la Valette St. George. The true spermatogonia are the cells of the peripheral layer; these grow into spermatocytes; each of the latter divides into four spermatides; numerous spermatides become associated with a follicular cell, and form a spermatogemma.

[VON EBNER, V.] Nachtrag "zur Spermatogenese bei den Säugethieren."
Op. cit. xxxi, 3, pp. 424 & 425.

Historical note on an overlooked research by Sertoli.

FIEDLER, K. Ueber Ei- und Samenbildung bei *Spongilla fluviatilis*.
Z. wiss. Zool. xlvi, 1, pp. 85-128, 2 pls.

The division of the nucleus of the original male cell; one half rich, the other poor, in chromatin; the former divides into spermatozoa.

GILSON, C. Étude comparée de la spermatogénèse chez les Arthropodes. Troisième partie.—Conclusions. *Cellule*, iv, pp. 351-446, 1 pl. (xvi).

General review of previous results. Previous generalisations discussed and rejected, but no other proposed. Beyond distinguishing three stages of cell-multiplication and differentiation, the author maintains the impossibility of formulating any law of spermatogenesis.

HICKSON, S. J. [See Oogenesis.]

JENSEN, O. S. Mitteilungen über die Struktur der Samenkörper bei Säugetieren (reported by O. Zacharias). *Biol. Centralbl.* vii, 21, pp. 662-664.

KIEHLER, R. Recherches sur la double forme des spermatozoïdes chez le *Murex brandaris* et le *M. trunculus*. *Rec. Z. Suisse*, v, 1, pp. 101-150, 2 pls.

— Sur la double forme de spermatozoïdes chez les *Murex brandaris* et *trunculus* et le développement de ces spermatozoïdes. *C.R.* cvi, pp. 299-301.

KOLOSSOW, A. Beitrag zur Frage von der Entwicklung der Samenfäden bei Säugethieren. *CB. med. Wiss.* xxvi, pp. 562-565.

KOROTNEFF, A. Beiträge zur Spermatologie. *Arch. mikr. Anat.* xxxi, 3, pp. 334-341, 1 pl., and *Biol. Centralbl.* vii, pp. 683 & 684.

The main steps in the process in *Alcyonella fungosa* conform with the stages emphasized by v. la Valette St. George. The author compares a spermatozoon to "a free-living, highly specialised muscle-cell."

MASSART, J. Sur l'irritabilité des spermatozoïdes de la grenouille. *Bull. Ac. Belg.* xv, 5, pp. 750-754.

Preliminary to a future demonstration of how sensitiveness to touch aids in the penetration of the spermatozoon into the ovum.

°NIESSING, G. Untersuchungen über die Entwicklung und den feinsten Bau der Samenfäden einiger Säugetiere. *Verh. Ges. Würzb.* xxii, 2, 2 pls.

PRENANT, A. Observations cytologiques sur les éléments séminaux des Gastéropodes pulmonés. *Cellule*, iv, 1, pp. 137-177, 2 pls.

Especially the history of the "nebenkern," from its first appearance in the resting spermatogonium to its share in forming the spiral filaments in the spermatozoon.

[PRENANT, A.] Observations cytologiques sur les éléments séminaux des Reptiles. *Cellule*, iv, 1, pp. 181-197, 1 pl. [Cf. C.R. Soc. Biol. v, 1.]

In spermatogonia, seminiferous or germinative cells, the "nebenkern" appears as a granular crescent in the protoplasm. Its history is traced in the nematoblasts and spermatozoa, the parts of which are elaborately described.

°——. Note sur la structure des spermatozoides chez l'homme. C.R. Soc. Biol. v, 12.

ROBERT, E. Sur la spermatogénèse chez les Aplysies. C.R. cvi, pp. 422-425.

Two different modes of spermatogenesis exhibited by the same species.

SABATIER, A. Sur les formes des spermatozoides de l'Elédone musquée. *T. c.* pp. 954-956.

SANFELICE, F. Spermatogénèse des vertébrés. *Arch. Ital. Biol.* x, 1, pp. 69-122, 1 pl.

——. Spermatogenesi dei Vertebrati. *Boll. Soc. Nat. Napoli*, ii, 1, pp. 42-98, 3 pls.

Virtually a constant type in *Vertebrata*; in *Mammals* and *Sauropsida* spermatoblasts form spermatozoa plus expulsive and nutritive products, in *Amphibians* and *Selachians* the spermatoblasts form only spermatozoa; *Amphibian* spermatogenesis is a median type; the germinal cells—fixed cells of Sertoli, "cellules de soutien" of Merkel—represent the matrix of the spermatie epithelium; both chromatic and achromatic portions of the spermatozoa have nuclear origin; &c.

4. *Sex and Reproduction.*

BALBIANI, E. G. Recherches expérimentales sur la mérotomie des Infusoires ciliés. Contribution à l'étude du rôle physiologique du noyau cellulaire. 1 Partie. *Rec. Z. Suisse*, v, 1, pp. 1-72, 2 pls.

BARFURTH, D. Die Regeneration des Amphibienschwanzes. *Anat. Anz.* iii, pp. 403-405.

BARROIS, TH. Remarques sur le dimorphisme sexuel chez quelques amphipodes du genre *Mera*. *Bull. Soc. Z. Fr.* xiii, 2, pp. 57-59.

BERGENDAL, D. Männliche Copulationsorgane am ersten abdominalen Somite einiger Krebsweibchen. *Gefv. Ak. Förh.* xlv, No. 5, pp. 343-346.

BOULENGER, G. A. On the "Nursing" habits of *Dendrobates*, as observed by A. Kappler. *Ann. N. H.* (6) i, pp. 454 & 455.

The young tadpoles gather round and suck on to the parent.

BRADY, H. B. Note on the Reproductive Condition of *Orbitolites complanata* var. *luciniata*. *J. R. Micr. Soc.* 1888, pp. 693-697, 1 pl.

Inter alia, notes on the possible sexual dimorphism of *Foraminifera*.

BRETON, PH. Développement artificiel de l'instinct maternel chez les Chapons. *Rev. Sci.* xlii, p. 811.

BROOKS, W. K. The Life History of *Epenthesis McCradyi* (n. sp.). *Stud. Biol. Lab. J. Hopkins Univ.* iv, 4, pp. 147-162, 3 pls.

Buds grow as if parasitically from the reproductive organs of the *Medusa*, and the blastostyles bear *Medusa* buds.

——. A New Method of Multiplication in Hydroids. *Op. cit.* vii, pp. 29 & 30.

What seems to be a very peculiar process of modified budding in a species of *Oceania*. [See *Calenterata*.]

——. Notes on the Ratio between Men and Women. *T. c.* p. 30.

°FOKKER, A. P. Untersuchungen über Heterogenese. Heft III. Groningen : 8vo, pp. 87-155, 4 pls.

GEDDES, P. [See *Evolution*.]

The antithesis between the nutritive and reproductive factors in evolution.

GOEHLERT, V. Die Schwankungen der Geburtenzahl nach den verschiedenen Tageszeiten. *Biol. Centralbl.* vii, 23, pp. 725-727.

——. Die Schwankungen der Geburtenzahl nach Monaten. *Op. cit.* viii, 11, pp. 342-352.

GROBBEN, C. Ueber den Entwicklungscyklus von *Phylloxera vastatrix*. *Op. cit.* viii, 13, p. 413.

GRUBER, A. Weitere Beobachtungen an vielkernigen Infusorien. *Ber. Freiburg Ges.* iii, pp. 58-69, 2 pls.

Preceding the division of *Holosticha scutellum*, the numerous nuclei unite, and a small accessory nucleus appears, as if from the fusion of previously invisible elements. The small nucleus divides first, then the larger, with distinct nuclear figures. As division is being accomplished the nuclear divisions go on apace, and the accessory elements are finally lost.

°——. Sexuelle Fortpflanzung und Konjugation. *Humboldt*, vii, 1, pp. 3-7.

HATSCHEK, B. Ueber die Bedeutung der geschlechtlichen Fortpflanzung. *Biol. Centralbl.* vii, 21, pp. 664-666. [Cf. *Prag. Med. Wochschr.* No. 46, 1887.]

The fundamental process is assimilation. Sexual reproduction, or fertilization, in which Weismann finds the source of variation, must be regarded as a counteractive to disadvantageous variability—a rectifying process.

——. On the significance of sexual reproduction. [Trans.] *Ann. N. H.* 1888, pp. 163 & 164.

ISCHIKAWA, C. [See *WEISMANN, A.*]

°JANKE, H. Die willkürliche Hervorbringung des Geschlechts bei Menschen und Haustieren. 2 vermehrte Aufl. Neuwied : 8vo.

JOLIET, L. Études anatomiques et embryogéniques sur le *Pyrosoma giganteum*, suivies de recherches sur la faune de Bryozoaires de Roscoff et de Menton. Paris : 8vo, 112 pp., 5 pls.

A posthumous publication of papers, containing, *inter alia*, "Observations sur la Blastogénèse et la Génération alternante chez les Salpes et les Pyrosomes," pp. 97-102.

KARSTEN, H. Parthenogenesis und Generationswechsel in Tier- und Pflanzenreiche. Berlin : 8vo, 53 pp., 9 figs. (sep. Abdr. aus "Die Natur").

*KENNEL, J. VON. Ueber Teilung und Knospung der Tiere. Dorpat : Festrede, 4to, 26 pp.

*KISCH, E. H. Zur Geschlechtsentstehung beim Menschen. Humboldt, vii, pp. 297-299.

LANG, A. Ueber den Einfluss der festsitzenden Lebensweise auf die Tiere, und über den Ursprung der ungeschlechtlichen Fortpflanzung durch Teilung und Knospung. Jena : 8vo, 166 pp.

An important discussion of the relation between sedentary habit and various modes of asexual reproduction.

LE CONTE, J. Significance of Sex. Letter to Science, xi, 275, pp. 229 & 230.

(1) Notes that in 1879 & 1880 he had published a suggestion that sexual reproduction was a source of variation, "such mixing produces more plastic nature" &c. [So Treviranus, even]. (2) Differs from Weismann as to virtual identity of the nuclear substance in spermatozoon and ovum. (3) Refers to passage in which he has forestalled Hatchesek's theory (*q. v.*).

LO BIANCO, S. Notizie biologiche riguardanti specialmente il periodo di maturità sessuale degli animali del Golfo di Napoli. MT. z. Stat. Neap. viii, pp. 385-440.

A valuable compendium of facts on periods of sexual maturity.

LUCAS, A. H. S. On the production of Colour in Bird's Eggs. Tr. R. Soc. Vict. xxiv, 1 (1887), pp. 52-60.

MANTEGAZZA, P. Anthropologisch-kulturhistorische Studien über die Geschlechtsverhältnisse des Menschen. 2 Aufl. (From the Italian.) Jena : 8vo, 1888, ix & 384 pp.

MAUPAS, E. Recherches expérimentales sur la multiplication des Infusoires ciliés. Arch. Z. expér. vi, 1, pp. 165-277, 4 pls.

Rate of reproduction varies greatly in different forms, with quality and quantity of food, with alimentary adaptation, and temperature, but also with constitution. Conjugation does not strengthen or accelerate division; but without it the members of an insulated family degenerate, become old, die; it is essential to the life of the species. Details of this senile degeneration. The immortality of the *Protozoa* is dismissed as fanciful. The sexual character of the micro-nucleus is emphasized.

[MAUPAS, E.] Sur la conjugaison des Vorticellides. C.R. cvi, pp. 1607-1610.

The varied origin of the small-sized individuals in different species of *Vorticella* and *Carchesium*; the phenomena of conjugation; in both large and small conjugates there are hermaphrodite (micro) nuclear elements with equivalent and complementary functions.

*MAZZARELLI, G. F. Sur l'influence du mâle dans la production de quelques anomalies ou monstruosités. J. Microgr. xii, pp. 380-382.

MEEHAN, T. Contributions to the Life-Histories of Plants. No. III. P. Ac. Philad. 1888, pp. 391-398.

Botanical, but of general import. "Varying measures of heat influence the separate sexes,—the smaller measure influencing the male, while the female still continues to rest." Dichogamy thus arises.

MÖBIUS, K. Das Flaschentierchen (*Folliculina ampulla*). Biol. Centralbl. vii, pp. 721-723.

The peculiar budding process, in which the young form (like a Metazoon germ) remains until mature connected with the parent by a strand.

*NANSEN, F. Bergens Mus. Aarsber. for 1887 (1888), 34 pp., 2 pls.

Myxine glutinosa is ordinarily a protandric hermaphrodite. Till the body is about 32 cm. long it is a male, and after that it produces ova. In its reproductive relations, *Myxine* seems to be in a transition stage, still seeking the most profitable mode.

PLATE, L. Studien über Protozoen. Zool. Jahrb. iii, 1, pp. 135-200, 3 pls.

On conjugation of *Paramæcium*, &c.

PLATNER, G. [See Oogenesis.]

ROGENHOFER, A. Ueber die bisher beobachteten Fälle von Bastardirungen bei Schmetterlingen. SB. z.-b. Wien, xxxviii, 3, p. 73.

SEELIGER, O. Die Entstehung des Generationswechsels der Salpen. Jen. Z. Nat. xxii, pp. 399-414.

*STRUBELL, A. Untersuchungen über den Bau und die Entwicklung der Rüben-Nematoden, *Heterodera schachtii*, Schmidt. Bibl. Zool. (Leuckart & Chun) II. Cassel: folio, 52 pp., 2 pls.

First larval forms are Nematode-like, free-living in the earth; the second (also without sexual characters) become parasitic, sessile, and plump; in this state the females remain, while the males become mobile. This curious history compared with that of *Echinorhynchus*, and paralleled with that of some *Coccidæ*.

TICHOMIROFF, A. Androgynie bei den Vögeln. Anat. Anz. iii, pp. 221-228.

Two opposing sex-forces in all unisexual animals, of which one in very variable degrees predominates.

[TICHOMIROFF, A.]. Nochmals über Parthenogenesis bei *Bombyx mori*. Zool. Anz. xi, pp. 342-344.

VERSON, E. Ueber Parthenogenesis bei *Bombyx mori*. T. c. pp. 263 & 264.

WAGNER, W. La Mue des Araignées. Ann. Sci. Nat. vi, pp. 281-393, 4 pls.

Inter alia, general discussion of moulting, regeneration, with interesting notes on the reproductive phenomena.

WEISMANN, A., & ISCHIKAWA, C. [See Oogenesis.] Ueber die Bildung der Richtungskörper bei tierischen Eiern. Ber. Freiburg Ges. iii, pp. 1-144, 4 pls.

Cf. Biol. Centralbl. viii, 4, pp. 124-126. Review.

MAMMALIA.

BY

R. LYDEKKER, B.A., F.G.S.

EXCLUSIVE of a number of names proposed by HEUDE, which do not appear entitled to take a place in the list, the following table shows the number of new generic and specific names recorded during 1888, a few of the latter being, however, those omitted from an earlier volume :—

NEW GENERA.	RECENT.	FOSSIL.	NEW SPECIES.	RECENT.	FOSSIL.
32	7	25	161	60	101

In addition to these, three generic names have been proposed to replace preoccupied ones.

The number of new generic and specific names proposed for fossil forms is much less than in the preceding year ; but there is an increase of fifteen in the number of new specific terms applied to existing Mammals. The most remarkable feature of the year, in this respect, is, however, the comparatively large number of new genera among living forms. Thus, of the seven new generic terms proposed during the year all but one indicate entirely new forms, of which the most interesting appear to be *Pteralopex* among the *Chiroptera*, *Eupetaurus* in the *Sciuridæ*, and *Deomys* in the *Muridæ*. A form which is, however, likely to prove of far more interest is the new Australian Mammal, to which a name has not as yet been applied. The large number of new recent species is extensively made up of *Soricidæ* and *Muridæ*.

The most startling feature among fossil Mammals is the discovery that the bones of the feet on which the presumed Edentate genus *Macrotherium* was founded are really referable to the Perissodactylate genus *Chalicotherium*. Of considerable interest from a distributional point of view is the discovery of remains of *Orycteropus* in one of the islands of the Turkish Archipelago.

Among the more important works and memoirs which have appeared during the year, the following may be especially mentioned: BLANFORD'S *Mammals of India*, of which the first part has appeared, is an extremely important work from every point of view. A work which will have many points of connection with the one last mentioned is the description by BÜCHNER of the *Mammals* collected by Przewalsky in Central Asia, of which the first part has been published during the year. TURNER'S Report on the Seals collected by the 'Challenger,' is also a work which cannot be passed over. From a systematic point of view the most important volume of the year is THOMAS'S *British Museum Catalogue of Marsupials and Monotremes*.

In respect of fossil *Mammals*, attention may be especially directed to the following works, viz.: COPE'S *Fauna of the Puerco Eocene*; FORSYTH-MAJOR'S preliminary description of the Fossil *Mammals* of Samos; OSBORN'S *Mesozoic Mammals*; RÜTIMEYER'S *Comparison of the Mammals of the Swiss Siderolites* with those of the American Eocene; SCHLOSSER'S *Tertiary Carnivora of Europe*; and WEITHOFER'S *Monograph of new mammals from the Pikermi beds*. The beautiful plates illustrating FILHOL'S *Monograph of Lophiodon* are also especially worthy of notice.

I.—THE GENERAL SUBJECT.*

ALLEN, H. *The Distribution of the Colour Marks of the Mammalia*. P. Ac. Philad. 1888, pp. 84–105.

After a long discussion, the author concludes that "mimeticism" and "natural selection" are not sufficient to have caused the colour-markings of the *Mammals*; illustrating this opinion by the suggestion that *Æluropus* has been unable to change its black feet and black orbital rings, although these appear out of harmony with the rest of its colouration.

ALZHEIMER, A. Über die Ohrenschmalzdrüsen. Verh. Ges. Würzb. xxii, art. 8, 20 pp., 2 pls.

The nerves of these auricular glands are described in certain *Mammals* in the course of this paper.

ARMAS, J. A. DE. *La Zoología de Colón y de Los Primeros Exploradores de América*. Havana: 1888, 8vo, 185 pp.

Pp. 14–100 are devoted to the *Mammals* of the district round Colonia, Uruguay, which are arranged under 165 specific headings; many of these so-called species are, however, usually regarded merely as varieties.

AUSTEN, E. E. *Natural History in Southern Germany*. Rep. Rugby Soc. 1887, pp. 29–40 (1888).

Gives a popular account of the *Mammals* of this district.

* An asterisk prefixed to the quotation indicates that the Recorder has not seen the journal or work referred to.

BALL, V. Further Notes on the Identification of the Animals and Plants of India which were known to early Greek Authors. P. R. Irish Ac. (3) i, pp. 1-9.

Some additional observations regarding the identification of the Tiger with the Martikhora are added; and it is suggested, from the occurrence of *Hyæna crocuta* in the Pleistocene of Madras, that the Krokottas may possibly refer to the existence of that species in India during the pre-historic period, rather than to the African race.

BAUR, G. On the Quadrate in the *Mammalia*. Q. J. Micr. Soc. xxviii, pp. 169-180. [Omitted from Zool. Rec. xxiv.]

Concludes that the Sauropsidan quadrate is contained in the zygomatic process of the squamosal of Mammals.

BEAUREGARD, H. Considerations sur les Deux Dentitions des Mammifères. C.R. Soc. Biol. (8) v, pp. 230-233.

— Deuixième Note sur les Deux Dentitions des Mammifères. T. c. pp. 259-261.

Criticizes the observations of Lataste (*infra*, p. 12), and concludes that the true molars belong to the first, and not the second, dentition.

BEDDARD, F. E. [See *Didelphyidæ*.]

BELLONCI, J. Ueber die centrale Endigung des Nervus Opticus bei den Vertebraten. Z. wiss. Zool. xlvii, pp. 1-46, pls. i-viii.

Pp. 19-26 are devoted to the consideration of these organs in the *Mammalia*, as represented by the *Rodentia*, *Insectivora*, and *Chiroptera*.

BIELZ, E. A. Die Fauna der Wirbelthiere Siebenbürgens, &c. Verh. siebenb. Ver. xxxviii, pp. 15-120.

The list includes 75 species of Mammals, but this comprises introduced and domesticated forms like the Guinea-pig, Cat, Buffalo, Horse, &c.

BIMAR, —. Recherches sur la Distribution des Vaisseaux Spermatiques chez les Mammifères et chez l'Homme. J. de l'Anat. Phys. xxiv, pp. 265-273, pl. xi.

A notice of the distribution of the testicular artery in various groups of Mammals.

BLANFORD, W. T. The Fauna of British India, including Ceylon and Burma—*Mammalia*, pt. i. London & Calcutta: 8vo, 250 pp., 71 woodcuts.

This fasciculus is the first part of a general work descriptive of the whole of the recent *Vertebrata* of the British Indian Possessions, which is to be completed in seven volumes. The present part treats of the orders *Primates*, *Carnivora*, and *Insectivora*. The classification followed is based on that of Flower, although in many cases a larger number of generic divisions are admitted. Each species is fully described, and in many cases either the skull or the external form is illustrated by a woodcut. The number of species includes 27 *Primates*, 73 *Carnivora*, and 33 *Insectivora*. In the *Felidæ* the name *Felis nebulosa* is taken to supersede *F. macrocelus*, while a large number of forms are grouped as synonyms of *F. bengalensis*, and *F. isabellina* is regarded as inseparable from *F. lynx*. In the *Viver-*

ridæ the genus *Viverricula* is adopted, and a number of excellent illustrations are given of the palate and dentition of *Paradoxurus* and allied genera, the name *Herpestes mungo* being adopted for the common Mun-goose. The *Canidæ* are split up into *Canis*, *Cyon*, and *Vulpes*; the common Fox being termed *Vulpes alopec*, and being taken to include *V. montanus*, of Blyth. The true Musteloids are divided into *Mustela* and *Putorius*; while in the Lutrines, *Lutra nair* is identified with *L. vulgaris*, and the genus *Aonyx* abolished. *Ælurus* is, for the first time, placed in the *Procyonidæ*. The *Ursidæ* are divided into *Ursus* and *Melursus*, the name *U. torquatus* being adopted for the Himalayan Black Bear. Among the *Insectivora* it may be remarked that the Indian *Soricidæ* are arranged under the genera *Soriculus*, *Crocidura*, *Anurosorex*, *Chimarrogale*, and *Nectogale*. Reviewed in Ann. N. H. (6) ii, pp. 422-424; and in Zool. (3) xii, pp. 395-400.

[BLANFORD, W. T.] [See also *Chiroptera*.]

BLAUW, F. E. Resultate und Beobachtungen aus der Tierplege. Zool. Gart. xxix, pp. 3-5, 68-72, & 130-132.

These observations on animals in captivity relate, so far as Mammals are concerned, to *Catoblepas gnu*, *Hyrax capensis*, and *Cervulus reevesi*.

BONNET, —. Die stummelschwänzigen Hunde im Hinblick auf die Vererbung erworbener Eigenschaften. Anat. Anz. iii, pp. 584-606.

Observations on cases where the cutting of the tail had become hereditary in Dogs, with conclusions to be derived therefrom.

BORN, H. Ueber die Bildung der Klappen, Ostien, und Scheidewände im Säugetierherzen. T. c. pp. 606-612, woodcuts.

Describes the formations of valves and partitions in the Mammalian heart.

BOUVIER, E. S. Nouveaux Mammifères Fossiles de Sansan et du Quercy. Le Nat. 1888, pp. 149 & 150, 168 & 169, woodcuts.

A paper illustrative of Filhol's new fossil Mammals from the deposits mentioned. The first part notices *Mustela larteti* (see p. 32), *Lantamotherium* (see p. 34), and *Platu[y]prosopos* (see p. 52), with a figure of the jaw of the latter; while in the second part we have figures of the type mandibles of *Adapis angustidens* (see p. 26), *Amphitragulus quercyi* and *crassus*, and *Choilodon elegans* (see p. 52).

BRAUER, A. Die arktische Subregion; Ein Beitrag zur geographischen Verbreitung der Thiere. Zool. Jahrb. iii, Abth. f. System. pp. 189-308, pl. vii.

In the course of this article the distribution of the following Mammals is discussed, viz.: *Rangifer tarandus*, *Oribos moschatus*, *Lepus variabilis*, *Myodes torquatus* and *obensis*, *Ursus maritimus*, *Canis lagopus*, *Gulo borealis*, *Mustela erminea*, and *Canis lupus*.

BÜCHNER, E. Wissenschaftliche Resultate der von N. M. Przewalski nach Central-Asien unternommenen Reisen,—Zoologischer Theil. i. Säugethiere, pt. i, pp. 1-48, pls. i-v.

This part includes Rodents belonging to the family *Sciuridæ*. The

species described are *Pteromys volans*, *Tamias pallasii*, *Spermophilus erythrogenys* (pls. i & iv, 1-3), *S. alaschanicus* (n. sp., pl. ii, fig. 1), *S. mongolicus*, *S. obscurus* (n. sp., pls. ii & iv, 7-9), *S. evermanni* (pl. iv. 4-6), *Arctomys himalayanus*, *A. robustus*, *A. dichrous* (pls. iii & iv, 11-14). It also includes figures of the skulls of two new species of *Gerbillus* (*G. przewalskii* and *G. roborowskii*), of which the description will appear in a later part. [See *Sciuridæ*.]

BURMEISTER, C. V. Relacion de un Viaje a la Gobernacion del Chubut. An. Mus. B. Aires, iii, pp. 175-252.

A list of Patagonian Mammals is given on pp. 239 & 240.

CAMPBELL, A. J. Fauna of King Island.—*Mammalia*. Vict. Nat. iv, pp. 135 & 136.

Records 1 Rodent, 5 Marsupials, and 2 Monotremes, together with a Seal and a Dolphin, in the adjacent seas. King (or King's) Island is off the coast of Tasmania.

CAPELLINI, G. [See *Elephantidæ* and *Physeteridæ*.]

CARLINI, A. DE. Vertebrati della Valtellina. Ann. Soc. Ital. xxxi, pp. 17-90.

In this synopsis of the Vertebrate fauna of Valtellina, in the province of Sondrio, Italy, 27 species of *Mammalia* are enumerated, viz., 4 *Chiroptera*, 3 *Insectivora*, 9 *Carnivora*, 10 *Rodentia*, and 1 *Artiodactyle*.

Catalogue of the Zoological Collection obtained by N. M. Przewalsky during his Journey in Central Asia. St. Petersburg: 1887. Text, 12mo, 34 pp.; atlas, 4to, with 11 photographic plates. [Omitted from Zool. Rec. xxiv.]

This work is written in Russian, and has no author's name. The atlas contains figures of skulls, and stuffed specimens of a large number of Mammals arranged in groups. In the text these forms are catalogued under their scientific names, a number of the scientific names being new. Since, however, there is no author's name, and at least many of the new species have no diagnosis, these names must be regarded merely as MS. ones, and accordingly are not quoted.

COPE, E. D. Synopsis of the Vertebrate Fauna of the Puerco Series. Tr. Am. Phil. Soc. xvi, pp. 298-361, pls. iv & v.

After reviewing the opinions as to the serial position of the Puerco Eocene, and previous descriptions of its fauna, the author gives a complete list of the fauna, followed by descriptions of new species. The Mammals include 10 species of Multituberculates, 37 *Tillodontia* (*Tænidontia*); 50 of *Creodonta*; 3 provisionally referred to *Lemuroidea*; 23 of *Condylarthra*; and 2 of *Amblypoda*. A notice of this paper by its author, in Am. Nat. xxii, pp. 161-163. [See *Proviverridæ* and *Peritychidæ*.]

— [See also TOPINARD, p. 20, and *Primates*, *Carnivora*, *Rodentia*, *Amblypoda*, *Artiodactyla*, and *Suidæ*.]

CORNET, J. Note sur le Prétendu Proatlas des Mammifères et de *Hatteria punctata*. Bull. Ac. Belg. (3) xv, pp. 406-420, pl.

Adduces arguments to show that the so-called proatlas is not a distinct vertebra, illustrations being given from a number of Mammals.

DAVIS, J. R. A. A Text-Book of Biology, comprising Vegetable and Animal Morphology and Physiology. London: 8vo, 462 pp., 158 illustrations.

Pp. 318-360 are devoted to the Rabbit.

DAWKINS, W. B. [See *Procyonidæ*.]

DEBIERRE, C. Des Anomalies des Muscles Coexistantes et Corrélatives des Anomalies des Nerfs. C.R. Soc. Biol. (8) v, pp. 86-90.

Records instances in various Mammals where these two features are associated.

DE VIS, C. W. [See *Nototheriida*, *Diprotodontida*, and *Macropodida*.]

DOBSON, G. E. [See *Soricida*.]

DOGIEL, A. Ueber das Verhalten der nervösen Elemente in der Retina der Ganoiden, Reptilien, Vogel, und Säugetiere. Anat. Anz. iii, pp. 133-143, woodcuts.

A portion of this paper is devoted to the nerves of the Mammalian retina.

DOLLO, L. Sur le Proatlas. Zool. Jahrb. iii, Abth. f. Anat. pp. 433-446.

In this memoir the author controverts the opinions of J. Cornet (*suprà*) as to the non-existence of a proatlas in *Manis* and other Mammals, and supports the original view of Albrecht.

DREW, J. Notes on a Difficulty in Evolution. P. Cottesw. Nat. F. C. 1888, pp. 285-288.

Argues that since *Amphibia*, *Sauropsida*, and *Camelida* have elliptical blood-corpuscles, the most primitive Mammals ought to be Cameloids; and as this is not the case, evolution is untrue.

DURAND, J. P. La Genese naturelle des Formes Animales. Rev. Sci. xli, pp. 741-752, woodcuts.

Concludes that Terrestrial Mammals have for their immediate ancestors viviparous Enaliosaurs, the former existence of which has now been proved.

DUVAL, M. Les Placentas Discoides en Général, à propos du Placenta des Rongeurs. C.R. Soc. Biol. (8) v, pp. 675 & 676.

A preliminary note, partly discussing the question of the identity of the discoidal placenta of the Rodents with that of the Primates, in the course of which some observations are deduced from the study of Frommel's plates of the placenta of *Myotis* (p. 35); and also treating of the homology and origin of the placenta generally.

— Les Placentas Discoides. *T. c.* pp. 729-733.

In this paper a letter from E. van Beneden is quoted, in which the latter confirms the views of the author as to the homology and origin of the placenta.

EIMER, G. H. T. Ueber die Zeichnung der Tiere, pt. vi. Humboldt, vii, pp. 173-181, woodcuts.

A continuation of the paper quoted in Zool. Rec. xxiv, *Mamm.* p. 5. In this part figures are given of *Viverra*, *Galidictis*, *Rhabdogale*, *Mephitis*, *Mellivora*, *Meles*, *Gulo*, *Procyon*, &c., with a discussion on their colouration.

FALCHI, F. Sur l'Histogenèse de la Rétine et du Nerf Optique. Arch. Biol. Ital. ix, pp. 382-399, pl.

An elaborate memoir on the histological development of the retina and optic nerve of Mammals, in which it is shown that in some cases the development of this nerve is the same in the young as in the adult, while in others the papilla retains the capsular hyaloid artery.

FILHOL, H. Description de quelques Mammifères Nouveaux trouvés à Sansan (Gers.). Bull. Soc. Philom. (7) xii, pp. 24-32.

Describes a new genus of *Insectivora*, a new *Mustela*, and a new genus of *Artiodactyla*. [See *Tupaia*, *Mustelidæ*, and *Cervidæ*.]

— Mammifères Fossiles Nouveaux des Phosphorites du Quercy. T. c. pp. 10-18.

Describes 1 new species of *Adapis*, 2 of *Amphitragulus*, 1 of *Hyracotherium*, and a new genus of *Artiodactyla*. [See *Lemuridæ*, *Cervidæ*, and *Lophiodontidæ*.]

— [See also *Felidæ*, *Tapiridæ*, and *Anoplotheriidæ*.]

FLESCHE, M. Ueber die Deutung der Zirbel bei den Säugetieren. Anat. Anz. iii, pp. 173-176.

Suggests that the pineal gland of Mammals is not a rudimental organ, and advances other considerations as to its origin and use.

FORSYTH-MAJOR, C. J. Faune Mammalogiche dell' isole di Kos e di Samos. P.-v. Soc. Tosc. 1888, pp. 272-275.

A letter recording the occurrence in Kos of a Mammalian fauna like that of the Upper Pliocene of the Val d'Arno, and in Samos of one closely allied to that of the Pikermi beds of Greece.

— Sur un Gisement d'Ossements Fossiles dans l'Ile de Samos, contemporain de l'Age de Pikermi. C.R. cvii, pp. 1178-1181.

A fuller account of the Pliocene Mammals of Samos mentioned in the preceding memoir. A number of Carnivores and Ungulates identical with those of Pikermi are mentioned; in addition to which are a new genus of *Manidæ*, a new species of *Orycteropus*, and a new genus of *Giraffidæ* are named. [See *Giraffidæ*, *Manidæ*, and *Orycteropodidæ*.]

GADOW, H. On the Modifications of the First and Second Visceral Arches, with especial reference to the Homologies of the Auditory Ossicles. Phil. Tr. clxxix, pp. 451-486, pls. lxxi-lxxiv.

In regard to the homology of the quadrate in the *Mammalia*, the author summarizes as follows, viz.:—"The quadrate gradually loses its articulation with the mandible; the latter gains a new, outer, articulation with the squamosal; the quadrate acts entirely as a tympanic frame. Incus

and malleus fuse sometimes with each other, and lean on to the parotic region. The masticating region is doubly concavo-convex.—*Monotremata*." "The quadrate is converted into the principal part of the tympanic frame, viz., annulus tympanicus. The mandible has lost its connection with the quadrate, and the masticatory joint is a single concavo-convex one, the convexity belonging to the mandible.—*Monodelphia*."

GAUDRY, A. [See *Ungulata* and *Rhinocerotida*.]

GAUP, E. Anatomische Untersuchungen über den Nervenversorgung der Mund- und Nasenhöhlendrüsen der Wirbelthiere. *Morph. JB.* xiv, pp. 437–489, pl. xix.

Pp. 481–485 are devoted to the consideration of these organs in Mammals; and the memoir concludes with a long summary of the results of the author's observations.

GEGENBAUR, C. Ueber Polydactylie. *T. c.* pp. 394–406.

Concludes that polydactylism is merely a malformation, and not an atavistic feature.

GIGLIOLI, E. H. Note intorno agli Animali Vertebrati raccolti dal Conte Boutourline e dal Dr. Leopoldo Traversi ad Assab e nello Scioa negli anni 1884–1887. *Ann. Mus. Genov.* (2) vi, pp. 5–73.

These collections were obtained from N.E. Africa. The Mammals comprise 5 Anthropoid *Primates*, 8 Carnivores, 5 *Bovida*, 1 *Phacochærus*, 2 Hyrax, 6 Rodents, and 1 Bat.

Guida del R. Istituto Geologico di Bologna. Bologna: 1888, 12mo, 74 pp., woodcuts.

Brief mention is made of the more important fossil Mammalian remains preserved in the Museum at Bologna, with figures of the skeleton of *Scelidotherium* and other specimens.

HAACKE, W. Ueber die Entstehung des Säugetiers. *Biol. Centralbl.* viii, pp. 8–16, 2 woodcuts.

Discusses the bearing of the oviparous production of the *Monotremata* on the origin of the Mammals. Figures are given of the mammary organs in *Echidna*.

HARTMANN, K. Die Säugethiere. In G. Neumayer's Anleitung zu Wissenschaftlichen Beobachtungen auf Reisen in Einzel-Abhandlungen. 2 vols., 8vo. Berlin: ii, pp. 328–362.

Chiefly devoted to directions for collecting and preserving Mammals.

HEAPE, W. [See *Talpidae*.]

HEILPRIN, A. The Geological Evidences of Evolution. Philadelphia: 1888, 8vo, 99 pp., illustrated.

A considerable portion of this work is devoted to the progressive evolution of the *Mammalia* from the Eocene to the present day. Reviewed by T. G. BONNEY, in *Nature*, 1888, pp. 50 & 51.

HERTWIG, O. Lehrbuch der Entwicklungsgeschichte des Menschen und der Wirbelthiere. Jena: 8vo, 507 pp., woodcuts.

A general text-book of Vertebrate embryology.

HERZFELD, P. Ueber das Jacobson'sche Organ des Menschen und der Säugethiere. Zool. Jahrb. iii, Abth. f. Anat. pp. 551-574, pls. xxiii & xxiv.

Describes and figures these nasal glands in a number of Mammals, and gives certain conclusions as to their functions and homology. It is contended that Ruysch's gland in the human subject is not the same as Jacobson's gland.

HÖWIGSCHMIED, J. Kleine Beiträge betreffend die Anordnung der Geschmacksknospen bei den Säugethieren. Z. wiss. Zool. xlvii, pp. 190-200.

The taste-corpuscles are described in *Felis*, *Ursus*, *Equus*, *Sus*, *Cricetus* and *Mus*; then follow the conclusions to be derived therefrom, the paper ending with a criticism on previous observations.

HOFMANN, A. Beiträge zur Kenntniss der Säugethiere aus den Miocän-schichten von Vordersdorf, bei Wies, in Steiermark. JB. geol. Reichsanst. xxxviii, pp. 77-82, pl. i.

Describes from the Miocene of Styria remains of the following species, viz., *Lutra valetoni*, *Mastodon angustidens*, *Palaeomeryx eminens*, *Amphitragulus boulangeri*, *Hyomoschus crassus* (*Dorcatherium navi*), and a species of *Rhinoceros*, with figures of the mandible of the first, third, and fourth. Lydekker's identification of *Amphitragulus pomeli* with *A. boulangeri* is confirmed. The named species comprise some from the Sansan and others from the St. Gérard-le-Puy stage of the French Miocene.

—. Beiträge zur Säugethierfauna der Braunkohle des Lebitschberger bei Gamitz in Steiermark. T. c. pp. 547-561, pls. vii-x.

Describes and figures remains of the following Mammals from the Middle Miocene of Styria, viz., *Mustela gumlitzensis*, *Antelope cristata*, *Palaeomeryx bojani*, *P. furcatus*, *Hyomoschus crassus*, and *Hyotherium sammerringi*.

HUBRECHT, A. A. W. Die erste Anlage des Hypoblasts bei den Säugethieren. Anat. Anz. iii, pp. 906-912, woodcuts.

A reply to E. van Beneden concerning the hypoblast in Mammals.

HUMPHREYS, J. The Suppression and Specialization of Teeth. P. Birmingham. Phil. Soc. vi, pp. 137-161.

Commences with a description of the serial divisions of Mammalian teeth, and attributes their variation to the following causes, viz.: lateral compression, elevation of basal ring or cingulum, union of denticles, plication of margins, bifurcation of roots, and production of accessory roots. A general survey is then given of the numerical variation of the teeth in different groups, and the paper concludes with tables illustrative of the same.

HUTH, E. Beiträge zur Kenntniss der märkischen Fauna. MT. Ver. Frankfurt-a-O. vi, pp. 13-16, 30-35, & 53-57.

The first part is devoted to the consideration of the Carnivores, the second to the Rodents, and the third to the Ungulates, found in the province in which Berlin stands.

INGLIS, J. *Tent Life in Tigerland*. 2nd ed. London : 8vo, 366 pp., pls.

Contains a sporting account of several Indian Mammals.

JACCARD, A. *Sur les Animaux Vêtrébrés Fossiles de l'Etage Cénigien du Locle*. Bull. Soc. Neuchatel, xvi, pp. 52-57.

The following Mammalian genera are recorded from the Cénigien beds in the valley of the Locle, viz., *Machærodus*, *Amphicyon*, *Mustodon*, *Dinotherium*, *Listriodon*, *Rhinoceros*, *Ilyotherium*, *Palæomeryx*, *Cervus* (?), and *Antilope*.

JACKSON, W. H. *Rolleston's Forms of Animal Life. A Manual of Comparative Anatomy, with Descriptions of Selective Types*. Oxford : 8vo, 937 pp., illustrated.

The anatomy of the Common Rat and of the Rabbit is described and figured, and there is a discussion on the affinities of Rodents (pp. 38-45). The general characters of the *Mammalia* are described in a separate section (pp. 359-371).

JENTINK, F. A. *Catalogue Systématique des Mammifères (Rongeurs, Insectivores, Cheiroptères, Édentés, et Marsupiaux)*. Leiden : 1888, 280 pp.

A catalogue of the forms of the orders mentioned contained in the Muséum d'Histoire Naturelle des Pays-Bas. No descriptions or references to names are given.

—. *On a Collection of Mammals from East Sumatra*. Notes Leyd. Mus. xi, pp. 17-30.

Considers that the fauna of this district is closely related to that of Borneo. Records 49 species, of which one is new. The Sumatran Elephant is regarded as specifically distinct from the Indian. [See *Sciuridæ*.]

—. *Zoological Researches in Liberia. A List of Mammals collected by J. Büttikofer, C. F. Sala, and F. X. Stampfli*. *Op. cit.* x, pp. 1-5 & 8, pls. i-iv.

This paper treats altogether of 90 species of Mammals, comprising 13 *Primates* (1 new), 11 *Carnivora*, 4 *Insectivora* (3 new), 17 *Chiroptera* (2 new), 25 *Rodentia* (2 species 1 genus new), 16 *Ungulata*, 1 *Sirenia*, and 3 *Edentata*. The plates comprise a frontlet of *Terphone* (*Terpone*) *longiceps*, *Cephalopus doria* and skull, and *Dendrohyrax dorsalis* (plate lettered *stampflii*). The Cuvierian orders *Ruminantia* and *Pachydermata* are retained. The genus *Cheropsis* is retained for the Liberian Hippopotamus, and it is suggested that there may be more than one species included in *Hippopotamus amphibius*. The Chimpanzee is included in *Simia*. [See *Cercopithecidae*, *Soricidae*, *Pteropodidae*, *Vespertilionidae*, and *Myoridae*.]

*JORDAN, D. S. *A Manual of the Vertebrate Animals of the Northern United States*. 5th ed. Chicago : 1888, 12mo.

KEMPEN, C. VAN. Sur une Série de Mammifères et d'Oiseaux d'Europe Présentant des Anomalies ou des Variétés de Coloration. Bull. Soc. Z. Fr. xiii, pp. 103-108.

Records albinism in the following Mammals, viz., *Meles taxus*, *Talpa europæa*, *Erinaceus europæus*, *Mus rattus*, *M. decumanus*, *M. musculus*, *Arvicola amphibius*, *Lepus timidus*, *L. cuniculus*, and *Mustela foina*; some of these also exhibiting other abnormalities in colouration.

KERVILLE, H. G. DE. Faune de la Normandie.—Mammifères. Bull. Soc. Rouen, ii, pp. 117-246, pl. i.

A classified synopsis of all the Mammals now inhabiting Normandy, which comprise 13 Bats, 7 Insectivores, 14 Rodents, 12 Carnivores, 3 Ungulates, and 11 Cetaceans, or a total of 60. *Crocidura leucodon* is added in the appendix, on pp. 233 & 234, thus bringing up the number of species recorded in the text from 59 to 60, if this form is really distinct from *C. araneus*. The plate illustrates the external form of *Mustela lutreola*.

KILLIAN, G. Ueber die Bursa und Tonsilla Pharyngea. Morph. JB. xiv, pp. 618-711, pls. xxv & xxvi, and woodcuts.

The first part is devoted to the pharyngeal bursa, in the course of which (pp. 658-663) this organ is described in several Mammals. The second part treats of the tonsils, in which pp. 673-686 are devoted to these organs in Mammals.

KLAATSCH, H. Zur Morphologie der Tastballen der Säugethiere. T. c. pp. 406-435, pls. xvii & xviii.

An elaborate description of the tactile corpuscles on the palmar aspect of the manus and pes in the various groups of Mammals. Traces back the linear system found in the human hand to the Marsupials.

KOKEN, E. Ueber die miocänen Säugethier-Reste von Kieferstadt in Oberschlesien, und über *Hyænarctos minutus*, Schlosser MS. SB. nat. Fr. 1888, pp. 44-49, figs. 1 & 2.

Makes some general remarks on the Mammals of the Miocene of Upper Silesia, and describes and figures remains of a new species of *Hyænarctos*. [See *Ursidae*.]

— [See also *Glyptodontidae*.]

KOLLMANN, J. Handskelett und Hyperdactylie. Anat. Anz. iii, pp. 515-529, pl. ii.

A part of this paper is devoted to the consideration of the structure of the hand and foot in Mammals. It deals especially with the question as to whether "hyperdactylium" and "hyperphalangism" are to be regarded as acquired or atavistic characters.

KOSTANECKI, K. VON. Zur Kenntniss der Tubenmuskulatur und ihrer Fascien. Arch. mikr. Anat. xxxii, pp. 479-592.

LANKESTER, E. R. Article "Zoology." Encycl. Brit. 9th ed. xxiv, pp. 799-820.

On pp. 812 & 813 the following arrangement of the *Mammalia* is proposed:—

Class *Mammalia*.

Grade 1. MONOTREMA.

Grade 2. DITREMA.

Branch a. MARSUPIALIA.

Orders—1. *Baryopoda* ; 2. *Rhizophaga* ; 3. *Macropoda* ;
4. *Carpophaga* ; 5. *Pedimana* ; 6. *Cantharophaga* ; 8. *Edentula*.

Branch b. PLACENTALIA.

Sub-branch a. TYPIDENTATA.

Orders—1. *Proinsectivora* ; 2. *Insectivora* ; 3. *Carnivora* ;
4. *Ungulata* ; 5. *Amblypoda* ; 7. *Sirenia* ;
8. *Toxodontia* ; 9. *Rodentia* ; 10. *Proboscidea* ;
11. *Hyracoidea* ; 12. *Chiroptera* ; 13. *Prosimia* ; 14. *Simia*.

Sub-branch b. EDENTATA.

Orders—1. *Bradypoda* ; 2. *Effodientia*.

LATASTE, F. Analyse Zoologique de Pelotes de Réjections de Rapaces Nocturnes. Ann. Mus. Genov. (2) vi, pp. 471-518.

An analysis of the "castings" of Owls has shown that these consist much more largely of the remains of *Soricidæ* than of those of *Muridæ*, from which it is inferred that Owls are not beneficial to agriculture and horticulture, as had been supposed.

— Des Dents Exceptionnellement Monophysaires chez les Mammifères Diphyodontes. CR. Soc. Biol. (8) v, pp. 37-41.

In this memoir the term *monophysaires* is applied to teeth like the true molars of Diphyodonts, which have no predecessors ; while teeth having such predecessors are termed *diphyosaires*. Instances a young Rabbit, in which there are teeth regarded as the milk-predecessors of the large incisors. Also a skull of *Phoca grælandica*, showing three milk incisors, the milk-canine, and the last three milk-molars ; it being stated that the first and second incisors are usually not developed. In the Badger it is stated that there are four milk-molars. The question is then discussed as to the homology of the first cheek-tooth of the Dog, Pig, &c., and the conclusion is reached that it is a premolar. The loss of the milk-incisors in Rodents is considered to support the view that the milk-teeth are the elder.

— Des Deux Dentitions, de Lait ou Permanente, des Mammifères, Quelle est la Dentition Primitive. T. c. pp. 59-61.

Disputes the arguments of W. H. Flower and O. Thomas [Zool. Rec. xxiv, *Mamm.* p. 55], that the milk-dentition is the elder, and concludes that the most primitive Mammals were diphyodont, having inherited their milk-teeth from Reptiles or *Amphibia*.

— Considerations Positives sur les Deux Dentitions des Mammifères. T. c. pp. 203-206.

A further discussion on the subject of the previous paper. Considers that a diphyodont dentition is the typical one, and adopts the opinion

that the true molars are serially homologous with the prémolars, and not with the milk-molars.

[LATASTE, F.] Encore sur les Deux Dentitions des Mammifères. *T. c.* pp. 475-480, 496-501, & 537-540.

Comments on the criticisms of Beauregard (*suprà*, p. 3), and supports the generally adopted opinion as to the serial homology of the true molars. The embryological arguments are next discussed; and attention is directed to the serial homology of the incisors of Rodents and the teeth of *Cetacea*, which are referred to the permanent series. In conclusion, it is noticed that while the true molars of Diphyodonts develop from front to back, the prémolars appear in the reverse direction, but the incisors in the same direction as the molars; and it is argued that this affords important evidence as to the homology of the teeth in cases of reduced dentition. [See also *Rodentia*.]

LECHE, W. Säugethiere (Bronn's Klassen u. Ordnungen, vol. vi, pt. 5), 30th and 31st (1888)—*Mammalia*.

— [See also *Marsupialia* and *Dermoptera*.]

LEMOINE, V. Sur quelques Mammifères carnassiers recueillis dans l'Éocène inférieur des environs de Reims. *C.R.* cvi, pp. 511 & 512.

Notices certain jaws and teeth of Mammals from the Lower Eocene of Rheims, some of which are regarded as allied to *Proviverra*; while one is compared to *Spalacotherium*, and made the type of a new genus, *Tricusdiodon*.

LEYDIG, F. Pigmente der Hautdecke und der Iris. *Verh. Ges. Würzb.* xxii, art. 9, 25 pp.

Reference is made to several Mammals in the course of this memoir.

LOEWENTHAL, N. Zur Kenntnis des Keimfleckes im Ureie einiger Säuger. *Anat. Anz.* iii, pp. 363-373, woodcuts.

Observations on a method of showing the presence of the germinal spot in the Mammalian ovum, with a discussion of its characters.

LÜTKEN, C. H. Menneskelevninger i Brasiliens Huler og i de Lundske Samlinger. *E. Mus. Lund. en Samling af Afhandlinger.* i, art. iv.

In this article (which has a summary in French) on the occurrence of human remains in the Brazilian cave-deposits, mention is made of a number of the Mammals of the same deposits.

LUSTIG, A. Sulle Cellule Epitheliali nella Regione Olfattiva degli Embryoni. *Atti Ac. Tor.* xxiii, pp. 324-333.

LYDEKKER, R. Note on the Nomenclature of Three Genera of Fossil *Mammalia*. *Ann. N. H.* (6) i, p. 384.

Notices the substitution by Trouessart of *Ælurictis* for the preoccupied *Ælurogale*; proposes to adopt *Stylacodon* in place of *Stylodon*, which is likewise preoccupied; but sees no grounds for replacing *Æluropsis* by *Huplogale*.

— [See also *Ursidæ*.]

°MAGINI, J. Neuroglia e Cellule Nervose nei Feti. Atti dell xii Congresso medico. Padua: 1888.

——. Nouvelles Recherches Histologiques sur le Cerveau du Fœtus. Atti Ac. Linc. iv, pp. 760-763, and Arch. Biol. Ital. x, pp. 384-387.

Observations on the cerebral histology of various foetal Mammals.

MAGITOT, —. Sur les Deux Dentitions des Mammifères. CR. Soc. Biol. (8) v, pp. 261-263.

A criticism on Beauregard's view (*suprà*, p. 3) that the true molars belong to the first dentition, which is considered to be incorrect.

MAKOWSKY, A. Der Löss von Brünn, und seine Einschlüsse an diluvialen Thieren und Menschen. Verh. Ver. Brünn. xxiv, pp. 207-243, pls. i-vii.

The fauna described comprises Man, *Elephas primigenius*, *Rhinoceros antiquitatis* (*tichorhinus*), *Equus caballus*, *Bison priscus*, *Alces machlis* (*palmatus*), *Cervus* (*Megaceros*) *giganteus* (*hibernicus*), *C. elaphus*, *Capreolus caprea*, *Ursus spelæus*, *Hyæna striata* (*prisca*), *Canis* (*Lupus*) *spelæus*, *Canis* (*Vulpes*) *lagopus*, *Meles tazus*, and *Castor fiber*. The paper is illustrated with figures of a lower molar and atlas vertebra of *Elephas primigenius*, an antler of *Alces*, cranium of *Hyæna*, and several human skulls.

MARTIN, K. Neue Wirbelthierreste vom Pati-Ajam auf Java. Samm. Geol. Mus. Leid. (1) iv, pp. 87-116, pls. xi & xii, and JB. Mijnwzen. Nederl. Indie, xxvii, pp. 20-48, pls. xi & xii.

Describes and figures Elephant and other Mammalian remains from the later Tertiaries of Java. The forms mentioned are *Mastodon* sp., *Elephas* (*Stegodon*) *trigonocephalus*, *E. (S.) bombifrons*, *E. namadicus*, *E. hysudricus*, *Bos* sp., and *Cervus* sp.

MERRIAM, C. H. Remarks on the Fauna of the Great Smoky Mountains; with description of a New Species of Red-Backed Mouse (*Eutamias carolinensis*). Am. J. Sci. (3) xxxvi, pp. 458-469.

Briefly alludes to the Mammals of this area, and describes the Mouse mentioned (see *Muride*).

——. [See also *Canidae* and *Vespertilionidae*.]

MILNE EDWARDS, A. [See *Phalangeridae*.]

MIVART, ST. G. On the possibly Dual Origin of the Mammalia. P. R. Soc. xliii, pp. 372-379.

Commences with a discussion of the characters of the rudimental teeth of *Ornithorhynchus*, which are considered to be totally unlike those of any Reptile, and not very near to those of any other Mammal. Attention is then directed to the possibility of the Sauropsidan features shown by the Monotremes being due to reversion and degradation; but this is considered to be improbable, as the characters of the pectoral girdle are too similar in the two groups. It is finally suggested that the Monotremes are a comparatively late offshoot from the Sauropsidan stock; while all other Mammals may have been derived from primitive forms more or less closely related to the *Amphibia*. [See *POULTON*, p. 63.]

MOQUIN-TANDON, G. Morphologie des Glandes Mammaires. Bull. Soc. Toulouse, 1887, pp. 1 & li.

An abstract of a paper recording the homology of the mammary glands and their distribution in the different orders.

MORENO, F. P. Informe Preliminar de Los Progresos del Museo La Plata, durante el Primer Semestre de 1888. Boll. Mus. La Plata, 1888, pp. 1-35.

A preliminary report on the work of the La Plata Museum, containing a description of a number of species of Tertiary Mammals from S. America, of which 28 are regarded as new. Also mentions certain existing species, of which 1 is described as new. [See *Octodontidæ*, *Chinchilidæ*, *Caviidæ*, *Elephantidæ*, *Typotheriidæ*, *Equidæ*, *Macraucheniidæ*, *Cerridæ*, *Physeteridæ*, *Megatheriidæ*, and *Glyptodontidæ*.]

MOTT, F. Microscopical Examination of Clarke's Column in Man, the Monkey, and the Dog. J. Anat. Phys. xxii, pp. 479-497.

It is concluded that Clarke's column is limited in Man, the Monkey, and the Dog, to those regions of the spinal cord which have been shown to give rise to the fine medullated fibres of the visceral-vascular system in the Dog.

NATHUSIUS, A. [See *Bovidæ*.]

NEHRING, A. Ueber den Character der Quartärfauna von Thiede bei Braunschweig. JB. Mineral, 1889, i, pp. 66-98. [Extract published in advance in 1888.]

Commences with the horizons of the various ossiferous deposits, followed by a list of the fauna, which comprises 28 species of Mammals, and concludes with criticisms upon the observations of Wollemand and others.

——. Ueber die Diluvialfaunen von Westeregeln und Thiede. SB. nat. Fr. 1888, pp. 39-44.

Criticizes the observations of Pohlig and Wollemand upon this subject, and concludes that the former has confounded the faunas of two distinct periods.

——. Vorläufige Entgegnung auf Wollemand's Abhandlung über die Diluvialsteppe. T. c. pp. 155-166.

Further criticisms on the same subject.

——. [See also *Canidæ*, *Bovidæ*, and *Suidæ*.]

NICOLAS, A. Sur quelques détails relatifs à la Morphologie des Éléments Épithéliaux des Canalicules du Corps du Wolff. C.R. Soc. Biol. (8) v, pp. 337-339.

Describes certain peculiarities in the epithelium of the Wolffian bodies of the Pig, Rabbit, and Sheep.

NIESSING, G. Untersuchungen über die Entwicklung und den feinsten Bau der Samenfäden einiger Säugethiere. Verh. Ges. Würzb. xxii, art. 2, 29 pp., 2 pls.

Observations on the development of the seminiferous tubes of a number of Mammals; the results of the author's observations being summed up at the conclusion of the memoir.

NOACK, T., in Zool. Gart. xxix, pp. 283-285, replies to the criticisms of E. Schäff. [See p. 19.]

OSBORN, H. F. The Relation of the Commissures of the Brain to the Formation of the Encephalic Vessels. P. Am. Ass. for 1887, p. 262. [Abstract.]

The author suggests an hypothesis to account for the constant feature of the division of the embryonic brain into four swellings or vesicles.

——. The Nomenclature of the Mammalian Molar Cusps. Am. Nat. xxii, pp. 926-928.

Proposes a series of terms for the cusps found in the upper and lower teeth of the tritubercular type, which are mentioned under the heading of the next paper.

——. The Evolution of Mammalian Molars to and from the Tritubercular type. T. c. pp. 1067-1079, pl. xxv.

After mentioning the importance of the tritubercular type of molar structure from a morphological point of view, and referring to its frequent occurrence in the Mammals of the Puerco Eocene, and its persistence in several existing groups, the author proceeds to divide the stages of "Trituberculy" into the (I) Haplodont, a modification of which is represented by *Dromotherium*, (II) Triconodont, and (III) Tritubercular types. The following terms are then proposed to replace those in general use for the cusps of Mammalian molars, viz. :—

Upper Molars.

Antero-internal cusp	.	=	Protocone
Postero- " " or 6th cusp	.	=	Hypocone
Antero-external "	.	=	Paracone
Postero- " "	.	=	Metacone
Anterior intermediate cusp	.	=	Protoconule
Posterior " "	.	=	Metaconule

Lower Molars.

Antero-external cusp	.	=	Protoconid
Postero- " "	.	=	Hypoconid
Antero-internal or 5th cusp	.	=	Paraconid
Intermediate or antero internal cusp (in quadritubercular molars)	.	=	Metaconid
Postero-internal cusp	.	=	Entoconid.

The three cusps of *Triconodon* are considered to represent those of *Spalacotherium*, which clearly correspond to those of the "blade" of the tritubercular lower carnassial.

The paper closes with observations as to the evolution of the cusps in various groups, and the transition from a tritubercular to a quadritubercular type.

——. The Mylohyoid Groove in the Mesozoic and Recent *Mammalia*. T. c. pp. 75 & 76.

Mentions those genera in which this groove has been examined by the author, and concludes that its absence or presence is not of much importance in classification.

[OSBORN, H. F.] [See also *Chalicotheriidae*, *Marsupialia*, and *Didelphyidae*.]

PANSINI, S. Du Plexus et des Ganglions propres au Diaphragme. Arch. Biol. Ital. x, pp. 259-266.

Observations on certain peculiarities in the histology of the phrenic nerve and its plexuses.

PATERSON, A. M. On the Fate of the Muscle-Plate, and the Development of the Spinal Nerves and Limb-Plexuses in Birds and Mammals. Q. J. Micr. Soc. xxviii, pp. 109-130, pls. vii & viii. [Omitted from Zool. Rec. xxiv.]

This paper is divided into one section on the fate of the muscle-plate, and into a second on the growth and development of the spinal nerves. The conclusions respecting Mammals are summarized at the end.

PAVLOW, M. [See *Ungulata*.]

PERRIER, E. Le Transformisme. Paris: 1888, 12mo, 344 pp., woodcuts.

Pp. 386-340 are devoted to the origin of the *Mammalia*, and the mutual relations of the different orders.

PIERSOL, G. A. Über die Entwicklung der embryonalen Schlundspalten und ihre Derivate bei Säugethieren. Z. wiss. Zool. xlvii, pp. 155-189, pls. xvi & xvii.

An important memoir on the development and homology of the visceral clefts and arches of Mammals, in which the conclusions reached are stated at length at the end. The chief illustrations are taken from the Rabbit. The conclusions are also given in SB. Ges. Würzb. 1888, pp. 85 & 86.

POHLIG, H. [See *Elephantidae*.]

POULTON, E. B. [See *Felidae* and *Ornithorhynchidae*.]

PROBST, J. [See *Physeteridae*.]

RAE, J. Notes on Some of the Birds and Mammals of the Hudson's Bay Company's Territory, and of the Arctic Coast of America. J. L. S. xx, pp. 136-145.

Observations are given on the habits of *Lepus americanus*, *L. glacialis*, and *Myodes hudsonicus*.

RAMSAY, E. P. [See *Marsupialia*.]

REICHENOW, A. Handwörterbuch der Zoologie, Anthropologie und Ethnologie, vol. v. Breslau: 1888, 8vo, 640 pp., woodcuts.

Contains notices of many Mammalian genera, of which the first letter is L, M, or N.

— [See also *Bovidae*.]

REITTERER, E. Note sur la Structure de l'Iris chez les Mammifères, C. R. Soc. Biol. (8) v, pp. 319-323.

The main conclusion arrived at is that cellular fibres occur only in the sphincter of the iris, which is regarded as a single muscle, and the only one in the iris. [See also DEBIERRE.—*Hominidae*, p. 26.]

[BETTERER, E.] Origine et Évolution des Amygdales chez les Mammifères. J. de l'Anat. Phys. xxiv, pp. 1-80 & 274-360, pls. i, ii, xii, & xiii.

This memoir treats in great detail of the origin and development of the tonsils in different Mammals, giving at the conclusion a long summary of the author's conclusions.

REX, H. Beiträge zur Morphologie der Sängerleber. Morph. J.B. xiv. pp. 517-617, pls. xx-xiv.

An elaborate contribution to the study of the structure and morphology of the Mammalian liver, with illustrations showing the homology of the various lobes, and the distribution of the vascular system in different groups.

RIVIÈRE, E. Sur la Faune a les Ossements Humains des Baumas de Bails et de la grotte Saint-Martin (Alpes Maritimes). C.R. cviii, pp. 763 & 764.

Records remains of various species of Mammals found in association with those of Man.

RODNER, A. Verbreitung und Geschichte der Seesäugethiere. Vienna : 1888.

A summary of the history of the Pinnipeds, *Sirenia*, and *Cetacea*, with an account of their present distribution.

ROTH, S. Beobachtungen über Entstehung und Alter der Pampasformation in Argentinien. Z. geol. Ges. xl, pp. 375-464.

Discusses the ages of the various ossiferous deposits of Argentina, giving lists of the species of Mammals obtained therefrom.

RÜDINGER, N. Ueber die Abflusskanäle der Endolymph des inneren Ohres. SB. bayer. Ak. 1887, pp. 455-476, pls. iii-v.

Describes and figures the general relations, histology, and development of the ductus endolymphaticus, or aquæductus vestibuli ; the illustrations being chiefly taken from the Cat.

RÜTIMEYER, L. Ueber einige Beziehungen zwischen den Säugethierstämmen Alter und Neue Welt. Abh. schw. pal. Ges. xv, 63 pp., 1 pl.

The first section of this memoir is devoted to a general discussion of the principles of classification, and more especially as regards Ungulates ; while the second describes Mammalian remains from the Swiss siderolites, which afford additional evidence of the close relationship existing between the faunas of the Old and New Worlds, some of the former being described as new species. In the first part it is considered that Cope has laid too much stress on carpal and tarsal structure in his classification of the Ungulates, and that the *Condylarthra* cannot be regarded as a group of equal value with the *Diplarthra* (*Perissodactyla* + *Artiodactyla*). The upper molars of the *Condylarthra* are termed Trigonodont, while the name Zygodont is proposed to include both the Lophodont and Selenodont types of the more specialized Ungulates. In the second part the forms described comprise *Cenopithecus*, *Adapis*, *Phenacodus*, *Protongia*, and *Meniscotherium* (errorim *Meniscodon*) ; especial attention being directed to the importance of the occurrence of *Phenacodus* in Europe in relation to

the origin of the Horse. [See *Lemuridae*, *Phenacodontidae*, and *Meniscotheriidae*.] A Criticism by E. D. COPE, *Am. Nat.* xxii, pp. 831-835.

SALVADORI, T. Le Date della pubblicazione della "Iconografia della Fauna Italica" del Bonaparte, ed Indice delle specie illustrate in detta opera. *Bol. Mus. Zool. Anat. Comp. Torino*, iii, pp. 1-25.

SARDEMMANN, E. Beiträge zur Anatomie der Thränendrüse. *Ber. Freiberg Ges.* iii, pp. 95-125.

A general survey of these organs in the various orders, concluding with a discussion as to their origin, and their relations to the ocular glands of other Vertebrates.

SCHÄFF, E., in *Zool. Gart.* xxix, pp. 59 & 60, criticises T. Noack's observations on *Galictis vittata* and *Sus leucomystax* given in the paper cited in the second of the two papers quoted in *Zool. Rec.* xxiv, *Mamm.* p. 11. On pp. 346-348 an answer is given to a reply by Noack (*q.v.*).

SCHLOSSER, M. Ueber die Beziehungen der ausgestorbenen Säugetierfaunen und ihr Verhältniss zur Säugetierfauna der Gegenwart. *Biol. Centralbl.* viii, pp. 582-600 & 609-631.

The author considers that we may look upon Central Europe and N. America as the two great central points from which the Tertiary Mammalian fauna has spread. A summary is then given of the chief characters of the Mammals of the different Tertiary horizons of Europe, America, and Asia; and the relations of extinct to existing types are subsequently more fully discussed. It is considered that Ungulates are descended from primitive Carnivorous types, and that the *Condylarthru* represent the transitional forms.

SEELEY, H. G. [See pp. 63 & 64.] [See also *Carnivora*.]

SIMROTH, H. Zur Kenntniss der Azorenfauna. *Arch. f. Nat.* 1888, i, pp. 179-234.

A few Mammals, mostly introduced, are mentioned at the commencement of this paper.

THOMAS, O. Diagnosis of New Malayan Mammals. *Ann. N. H.* (6) ii, pp. 407-409.

Describes 1 new variety of *Hylomys*, and 1 new species of *Sciurus*, and 2 of *Mus*. [See *Erinaceidae*, *Sciuridae*, and *Muridae*.]

——. Diagnosis of Six New Mammals from the Solomon Islands. *Op. cit.* i, pp. 155-158.

Describes a new genus and species of *Pteropodidae*, a new species of the type genus of the same, a new genus and species of *Rhinolophidae*, and 3 new species of *Mus*. [See *Pteropodidae*, *Rhinolophidae*, and *Muridae*.]

——. List of Mammals obtained by Mr. G. F. Gaumer on Cozumel and Ruatan Islands, Gulf of Honduras. *P. Z. S.* 1888, p. 129.

Records 5 species from the former and 6 from the latter island.

——. On a Collection of Mammals obtained by Emin Pasha in Equatorial Africa, and presented by him to the Natural History Museum *T. c.* pp. 3-17, pls. i & ii.

Records 39 species, comprising 3 *Primates*, 8 *Carnivora*, 1 *Insectivora*, 3

Chiroptera, 22 Rodents (1 new), 1 *Hyracoidea* (new), and 1 *Edentata*. Of the 28 species from Monbuttu, 16 are W. African; while of the others, 5, although found in other districts, also occur in W. Africa, 5 are either peculiar to or only otherwise known from neighbouring Central African localities, 1 is Abyssinian, and 1 previously known from Natal. This shows that the forest fauna of the West extended across Africa as far as 28° East long., and still further some distance North. [See *Anomaluridae* and *Hyracidae*.]

[THOMAS, O.] On the Mammals of Christmas Island. *T. c.* pp. 532-534.

Records 1 *Crocidura*, 1 *Pteropus*, and 2 *Mus*, of which 1 is new. [See *Muridae*.]

—. On the Small Mammals of Duval County, South Texas. *T. c.* pp. 443-450.

The list includes 17 species, of which 4 are *Insectivora*, 3 *Chiroptera*, and the remainder *Rodentia*.

—. The Mammals of the Solomon Islands, based on the Collection made by Mr. C. M. Woodford. *T. c.* pp. 470-484, pls. xx-xxii.

This paper gives an account of a second collection made by Mr. Woodford in the Solomon Islands; and also gives a complete list of the Mammals known to occur in the group. The total number of species is 22, of which 17 are *Chiroptera*, 4 *Rodentia*, and 1 *Marsupialia*. Figures are given of the head and skull of *Pteropus* and *Pteralopex*, of the nose-leaf of *Anthops*, and of the skull and feet of 3 species of *Mus*. 1 new species of *Pteropus* is described from the Duke of York Archipelago. [See *Pteropodidae*, *Rhinolophidae*, and *Muridae*.]

—. [See also *Marsupialia* and *Didelphyidae*.]

TOPINARD, P. Les Dernières Étapes de la Généalogie de l'Homme. *Rev. Anthropol.* (3) iii, pp. 298-332.

This paper commences by discussing the systematic relations of the *Primates*, and considers that the *Lemuroidea* are rightly included therein. The question is then discussed whether Man is derived from the *Anthropoidea* or *Lemuroidea*, and it is concluded that neither of these groups are the ancestral stock, which should be sought among the Ungulate *Condylarthra*, such as the *Phenacodontidae*.

This memoir is reviewed by E. D. COPE, in the *Am. Nat.* xxii, pp. 660-663, wherein the following arrangement of the so-called order *Tareopoda* is proposed:—

Order TAXEOPODA.

Suborder I. HYRACOIDEA.—Fam. *Hyracidae*.

„ II. CONDYLLARTHRA.—Fams. *Peripitychidae*, *Phenacodontidae*, *Meniscotheriidae*.

„ III. DAUBENTONOIDEA.—Fams. *Chironomidae*, *Mixodectidae*.

„ IV. QUADRUMANA.—Fams. *Adapidae*, *Anaptomorphidae*, *Tarsiidae*, *Lemuridae*, *Cebidae*, *Cercopithecidae*.

„ V. ANTHROPOMORPHA.—Fams. *Simiidae*, *Hominidae*.

TORNIER, G. Die Phylogenese des terminalen Segmentes der Säugethier-Hindergliedmassen. *Morph. J.B.* xiv, pp. 223-328, pls. xi & xii.

A very elaborate memoir on the structure and development of the distal portion of the hind limbs of Mammals, especial attention being directed to the mutual relations of the astragalus and calcaneum.

TOURNEUX, F. L'Organe de Rosenmüller (épöphore) et le Parovarium (paröphore) chez les Mammifères. *J. de l'Anat. Phys.* xxiv, pp. 169-192, pl. viii.

A careful description of the foetal organ of Rosenmüller, or epöphoron, as displayed in the Sheep. New terms are proposed for the canals found in this structure.

TRUE, F. W. Guide to a Collection Illustrating the Families of Mammals in the Ohio Valley Exposition, 1888. *P. U. S. Nat. Mus.* xi, Appendix, pp. 1-26.

—. [See also *Geomyida*.]

TURNER, W. Comparison of the Convolutions of the Seals and Walrus with those of the *Carnivora* and of Apes and Man. *J. Anat. Phys.* xxii, pp. 554-581.

After comparing the cerebral convolutions in these groups, it is concluded that the smooth-brained lower *Primates* could not have been derived from the *Carnivora*, or at least from *Carnivora* which had acquired convoluted brains, since such convolutions would be unlikely to disappear. If the higher *Primates* have been derived from lower *Primates*, then the hemispheres of the former, with their complex convolutions, have been evolved from a smooth-brained stock, and not from an animal with a brain like that of a Dog or Seal. Accepting this, it is not surprising to find that the mode of arrangement of the convolutions in the *Primates* differs from that obtaining in the *Carnivora*.

—. [See also *Lemuroidea* and *Pinnipedia*.]

TYRRELL, J. B. Catalogue of the *Mammalia* of Canada, exclusive of the *Cetacea*. *P. Canad. Inst.* xxiv, pp. 66-91.

The list comprises 12 Ungulates, 35 Carnivores, 48 Rodents, 20 Insectivores, and 6 *Chiroptera*.

VACEK, M. Ueber neue Funde von Säugethierresten aus dem Wies-Eibiswalder Kohlenreviere. *Verh. geol. Reichsanst.* 1888, pp. 308-313.

Describes several Mammalian remains from the Middle Miocene of Eibiswald, but more especially a skull referred to *Rhinoceros sansaniensis*. This skull appears to have had but a single horn, and therefore indicates the distinctness of *R. sansaniensis* from the Lower Pliocene *R. schleiermacheri*, with which it has generally been identified.

VAN BEMBEKE. [See *Delphinida*.]

VAN BENEDEN. [See *Chiroptera*.]

VIRCHOW, H. Ueber das Rückenmark der Anthropoiden. *Anat. Anz.* iii, pp. 509 & 510.

First observes that the difference in the spinal marrow of individuals

of different ages belonging to a single species is greater than between equal aged individuals of distinct species ; and then proceeds to notice the distinctive features of this structure in several types.

VOGT, C., & SPECHT, F. The Natural History of Animals (Class *Mammalia*) in Word and Picture. Translated by G. G. CHISHOLM. 2 vols. London : 4to, illustrated.

WASZKIEWICZ, P. Zur Frage über die Beziehungen zwischen der Zahl der Fasern in den Nervenstämmen und dem Körpergewicht bei Säugethieren. *Anat. Anz.* iii, pp. 206-208.

A discussion concerning the relation between the number of fibres in the nerve trunks and the bodily weight of Mammals.

WEBER, M. Mededeelingen over Zoogdieren. *Bijdr. Dierk.* 1888, pt. v, 16 pp., 2 pls.

A memoir divided into three sections. The first describes a *Monotreme* allied to *Proechidna bruijnii*, but with four digits, giving figures of the skull and feet ; the second has remarks, accompanied by a plate, on *Canis jubatus* ; while the third contains tables of the weight of a number of Mammals.

WEITHOFER, A. Beiträge zur Kenntniss der Fauna von Pikermi bei Athen. *Beitr. Pal. Oesterr.-Ung.* vi, pp. 227-292, pls. x-xix.

An important memoir, based on the results of excavations in the Pliocene beds of Pikermi, conducted, in 1887, by MM. Neumayr and Tausch, and also on specimens from the same deposits preserved in the Hofmuseum at Vienna. The Mammals described and figured comprise 1 *Mustela* (new), 1 *Hyenarctus* (new), 2 *Machærodus* (1 new), 2 *Felis* (1 new), 1 *Dinotherium*, 1 *Hipparion*, 1 *Rhinoceros*, 1 *Giraffa* = *Camelopardalis* (new), 1 *Protragelaphus*, 1 *Helicoceras* (new gen.), and 1 *Antelope* (?), [See *Mustelidæ*, *Ursidæ*, *Felidæ*, *Equidæ*, *Giraffidæ*, and *Bovidæ*].

— [See also *Hyenidæ* and *Proboscidea*.]

WILCKENS, M. Alcuni Osservazione sulla Fauna delli Ligniti di Casteani e di Montebamboli (Torcana). *Boll. Com. Geol.* (2) ix, pp. 363-368.

Gives a summary of the Mammalian fauna of these Tuscan Miocene beds. Also adds a description of some remains of *Enhydriodon campanii* ; refers the jaw described by Meneghini as *Amphicyon laurillardii* to a new species of *Hyenarctos*, and describes a new *Mustela* and *Antelope*. [See *Ursidæ*, *Mustelidæ*, and *Bovidæ*.]

— [See also *Equidæ*.]

WILLIAMS, A. Pathology and its Relation to Evolution. *Sci. Goss.* 1887, pp. 80-82, 99-192, & 124-126, woodcuts. [Omitted from *Zool. Rec.* xxiv.]

In this memoir abnormalities occurring in certain Mammals, such as the presence of a centrale in the manus of a Baboon, and a lateral metapodial in the Horse, are described as atavistic features.

WINDLE, B. C. A. The Pectoral Group of Muscles. *P. R. Soc.* xlv, pp. 99 & 100.

An abstract of a paper which attempts to explain the morphology of

the pectoral group of muscles, and is based on the dissection of more than 50 Mammals and the description of others. A synopsis of the conclusions reached is given.

[WINDLE, B. C. A.] [See also *Procyonidae*.]

WORTH, R. N. The Cattedown Bone Cave. Rep. Plym. Inst. x, pp. 10-38, pls. & woodcuts.

Gives a list of the species of Mammals, of which remains are found in these caves, and describes and figures two human lower jaws and crania.

The Wild Animals of British India. Zool. (3) xii, pp. 361-367.

Gives the number of examples of various species of Mammals destroyed in a single year; and also the number of human beings killed by wild animals.

II.—FAUNAS.

A.—RECENT.

France. See KERVILLE, p. 11 (Normandy).

Germany. See AUSTEN, p. 2; BIELZ, p. 3; HUTH, p. 9.

Italy. See CARLINI, p. 5.

Arctic Regions. See BRAUER, p. 4.

Central Asia. See BÜCHNER, p. 4.

India. See BLANFORD, p. 3.

Africa. See GIGLIOLI, p. 8; THOMAS, p. 19.

Sumatra. See JENTINK, p. 10.

North America. See MERRIAM (Smoky Mts.), p. 14; THOMAS (Texas), p. 20.

Honduras. See THOMAS, p. 19.

South America. See ARMAS, p. 2; BURMEISTER, p. 5; ROTH, p. 18.

Australasia and Oceania. See CAMPBELL (King Is.), p. 5; RAMSAY (Queensland), p. 60; THOMAS (Christmas Is.), p. 20, and (Solomon Is.), p. 20.

B.—FOSSIL.

Europe. See SCHLOSSER, p. 27.

British Is. See WORTH, p. 23.

France. See FILHOL, p. 7; LEMOINE, p. 13; RIVIÈRE, p. 18.

Switzerland. See JACCARD, p. 10.

Germany. See MAKOWSKY, p. 14; NEHRING, p. 15.

Italy. See WEITHOFER, p. 30; WILCKENS, p. 22.

Greece. See WEITHOFER, p. 22.

Silesia. See KOKEN, p. 11.

Styria. See HOFMANN, p. 9.

Kos and Samos. See FORSYTH-MAJOR, p. 7.

Java. See MARTIN, p. 14.

North America. See COPE, p. 5.

South America. See MORENO, p. 15.

III.—SPECIAL STRUCTURES, DEVELOPMENT, &c.

ABNORMALITIES.

Colour.—See KEMPEN, p. 11.

General.—See WILLIAMS, p. 22.

Muscular.—See DEBIERRE, p. 6.

Polydactylism.—See GEGENBAUR, p. 8; POULTON (*Felidæ*), p. 29.

Respiratory.—See HOWES (*Rodentia*), p. 37.

Vascular.—See CARPENTIER (*Hominidæ*), p. 25.

DENTITION.—See BEAUREGARD, milk and permanent, p. 3; COPE, (*Amblypoda*) p. 44, (*Carnivora*) p. 27, (*Hominidæ*) p. 25, (*Rodentia*) p. 36; HUMPHREYS, p. 9; LATASTE, milk and permanent, p. 12, (*Canidæ*) p. 31; MAGITOT, milk and permanent, p. 14; NEHRING (*Suidæ*), p. 54; OSBORN, p. 16; POULTON (*Ornithorhynchidæ*), p. 63.

DERMIS, EPIDERMIS, &c. (excluding teeth).—See FJELSTRUP (*Delphinidæ*), p. 57; KÖLLIKER, nails (*Hominidæ*), p. 26; LUSTIG, olfactory epithelium, p. 13; VAN BEMBEKE, epidermal follicles (*Delphinidæ*), p. 57; SMITH (*Equidæ*), p. 47.

DEVELOPMENT.—See BIEHRINGER (*Muridæ*), p. 36; BONNET, allantois (*Artiodactyla*), p. 48; BORN, heart, p. 4; BOULART, placenta (*Artiodactyla*), p. 48; DUVAL, placenta, p. 6; FROMMEL, placenta (*Chiroptera*), p. 35; GIACOMINI (*Rodentia*), p. 36; HEAPE (*Talpidae*), p. 34; HUBRECHT, hypoblast, p. 9; KIEBEL (*Erinaceidæ*), p. 33; KÖLLIKER, nails (*Hominidæ*), p. 26; LUSTIG, olfactory epithelium, p. 13; MASIUS, placenta (*Rodentia*), p. 37; MORTON (*Echidnidæ*), p. 63; NICOLAS, Wolffian bodies, p. 15; OSBORN, foetal membranes (*Didelphyidæ*), p. 62; PIERSON, visceral clefts, p. 17; RYDER, placenta (*Rodentia*), p. 37; TOURNEUX (*Bovidæ*), p. 50, organ of Roseumüller, p. 21; TURNER, placenta (*Lemuridæ*), p. 26; VAN BENEDEN, placenta, &c. (*Chiroptera*), p. 36.

EAR.—See RÜDINGER, p. 18; and ALZEIMER, p. 2.

EYE.—See DEBIERRE, iris (*Hominidæ*), p. 26; DOGIEL, retina, p. 6; FALCHI, retina, p. 7; SARDEMANN, glands, p. 19; RETTERER, iris, p. 17.

GLANDS.—See ALZEIMER, p. 2; BEDDARD (*Didelphyidæ*), p. 62; GAUP, nasal and oral, p. 8; HERZFELD, nasal, p. 9; KILLIAN, tonsilar, p. 11; LECHE, mammary (*Marsupialia*), p. 58; MOQUIN-TANDON, mammary, p. 15; MOUSSU, parotid (*Bovidæ*), p. 50; RETTERER, tonsils, p. 18; SARDEMANN, ocular, p. 19; VAN BEMBEKE, follicular (*Delphinidæ*), p. 57.

HEREDITY.—See BONNET, p. 4; POULTON (*Felidæ*), p. 29.

MUSCLES.—See KELLY (*Ursidæ*), p. 31; KOSTANECKI, p. 11; RUGE, facial (*Primates*), p. 25; WINDLE, pectoral, p. 23, and (*Procyonidæ*), p. 32.

NERVES, BRAIN, &c.—See BELLONCI, optic nerve, p. 3; FLEISCH, pineal body, p. 7; HÜNGSCHMIED, taste-corpuscles, p. 9; KLAATSCH, tactile-corpuscles, p. 11; LECHE, hypophysis cerebri (*Insectivora*), p. 33; MAGINI, p. 14; MOTT, spinal cord, p. 15; OSBORN, brain, p. 16; PANSINI, phrenic, p. 17; PATERSON, development of spinal nerves, p. 17; STOWELL, glossopharyngeal (*Felidæ*), p. 29; THEODOR, brain (*Pinnipedia*), p. 28; TUCKERMAN, taste-bulbs (*Suidæ*), p. 54, (*Muridæ*) p. 40, (*Mustelidæ*) p. 32; TURNER, convolutions, p. 21, pineal body, p. 28; VIRCHOW, spinal cord, p. 22.

OSTEOLOGY.—See CORNET, proatlas, p. 6; DOLLO, proatlas, p. 6; LEBANQ (*Cetacea*), p. 55; KOLLMANN, p. 11; KÜKENTHAL (*Cetacea*), p. 55.

URINOGENITAL ORGANS.—See BIMAR, testicular vascular system, p. 3; CHAPMAN (*Hyænidae*), p. 30; LOEWENTHAL, ovum, p. 13; MARTIN, Wolffian bodies (*Rodentia*), p. 37; NIESING, seminiferous tubes, p. 15; NICOLAS, Wolffian bodies, p. 15; PRENANT, spermatozoa, p. 26.

VASCULAR SYSTEM.—See BIMAR, testicular, p. 3; CARPENTIER, abnormalities (*Hominidae*), p. 25; ROJECKI, arteries (*Primates*), p. 25.

VISCERA.—See PANSINI, nerves of diaphragm, p. 17; YOUNG & ROBINSON (*Hyænidae*), p. 30.

IV.—SPECIAL WORK.

(Fossil species and genera are indicated by a †.)

1. PRIMATES.

For the Indian species see W. T. BLANFORD, *suprà*, p. 3.

RUGE, G. Untersuchungen über die Gesichtsmuskulatur der Primaten. Leipsic: 1887, 4to, 130 pp., 8 pls. [Omitted from Zool. Rec. xxiv.]

An elaborate memoir, with numerous illustrations of the facial muscles of the *Primates*.

ROJECKI, F. Note sur la Disposition des Troncs Arteriels des Membres chez les Singes du Genre Macaque considérés par rapport a ceux des Singes Anthropomorphes et de l'Homme. C.R. Soc. Biol. (8) v, pp. 281–284.

A comparison of the course of the arteries of the limbs in the groups mentioned.

I. ANTHROPOIDEA.

a. HOMINIDÆ.

CARPENTIER, —, & BERTAUX, —. Anomalie des Systèmes de la Veine Cave Inférieure et des Veines Azygos, observée chez un Homme Adulte. C.R. Soc. Biol. (8) v, pp. 339 & 340.

Records, in a subject aged 37, the absence of the vena cava inferior, of which the function is performed by the azygos vein; and also the complete independence of the portal system.

COPE, E. D. On the Tritubercular Tooth in Human Dentition. J. Morph. ii, pp. 1–24, pls. i & ii.

Instances are recorded of the occurrence of one or more abnormal upper molars, with tritubercular crowns, which are regarded as a reversion to the dentition of Eocene Lemuroids, like *Anaptomorphus*; these abnormal teeth being especially common among the Esquimaux, and the Slavic, French, and American branches of the European race. It is argued that this constitutes an important confirmation of the author's view that the *Hominidæ* are directly descended from the *Lemuroidea* apart from the other *Anthropoidea*.

DEBIERRE, C. Sur le Muscle de l'Iris de l'Homme. C.R. Soc. Biol. (8) v, pp. 361 & 362.

A comment on the conclusions of Retterer (p. 17) with regard to the muscle of the iris, in which the author mainly agrees with that writer.

HARRISON, A. The Palatal Rugæ in Man. P. Ac. Philad. 1888, pp. 254-272, woodcuts.

Notes and figures the variations occurring in these rugæ, and records their connection with disease.

KÖLLIKER, A. Die Entwicklung des menschlichen Nagels. Z. wiss. Zool. xlvii, pp. 129-154, pls. xiii-xv.

An elaborate memoir on the development of the human nails. Reviewed by Q. DURAND, J. de l'Anat. Phys. xxiv, pp. 260-263.

PRENANT, A. Note sur la Structure des Spermatozoïdes chez l'Homme. C.R. Soc. Biol. (8) v, pp. 288-290.

In this communication the author points out that certain peculiarities described by Jensen [see Zool. Rec. xxiv, *Mamm.* p. 7] in the spermatozoa of many Mammals also occur in those of Man.

b. CERCOPITHECIDÆ.

Cercopithecus stampflii, n. sp., F. A. JENTINK, Notes Leyd. Mus. x, p. 10, Liberia.

II. LEMUROIDEA.

TURNER, W. An Additional Contribution to the Placentation of the Lemurs. P. R. Soc. xlv, pp. 277-282.

Describes the placentation of several genera, and concludes, from the megallantoid and non-deciduate character of the placenta in the Lemurs, that these animals should constitute a distinct order—the *Prosimii*.

a. LEMURIDÆ.

†*Cænopithecus lemuroides*: the dentition redescribed and figured by L. RÜTIMEYER, Abh. schw. pal. Ges. xv, p. 30, pl. i, figs. 1 & 2, by whom it is regarded as allied to the American *Pelycodus*.

†*Adapis parisiensis (duvernoyi)*: the dentition described and figured by RÜTIMEYER, t. c. p. 36, pl. i, figs. 3 & 4.

†*Adapis angustidens*, n. sp., H. FILHOL, Bull. Soc. Philom. (7) xii, pp. 10-12, Quercy Phosphorites, France; figured by E. L. BOUVIER, Le Nat. 1888, p. 168, fig. 3.

2. CARNIVORA.

For the Indian species, see W. T. BLANFORD, *suprà*, p. 3.

ALLEN, H. The Occipito-temporal Region in the *Carnivora*. Science, xi, p. 71.

States that the post-tympanic described by the author as occurring in *Ursus* above the squamosal and opisthotic, is probably also present in

Amphicyon, *Dinictis*, and *Archæolurus*. Also observes that the characters of the tympanic ring afford specific characters in the *Felidæ*, and are of importance in other groups.

COPE, E. D. The Mechanical Origin of the Teeth of the *Carnivora*. P. Am. Ass. 1887, pp. 254-257 (1888).

Considers that the most primitive type of tooth was a simple cone; next there arose fore-and-aft cusps, as in *Triconodon*; and it is argued that the effect of pressure would be to thrust these cusps in the upper jaw to the outer side, and in the lower jaw to the inner side of the main cusp, from which a trituberculate tooth would result. The origin of the sectorial teeth of the *Carnivora Vera* from a tritubercular tooth of this type is then traced, and considered to be due to the pressure of one tooth against the other, the location being due to the position of the masseter muscle. The tubercular teeth of the Dogs and Bears are regarded as of less specialized type than the sectorials.

PLACZEK, B. Wiesel und Katze, ein Beitrag zur Geschichte der Haustiere. Verh. Ver. Brünn. xxvi, pp. 124-191.

An elaborate memoir, divided into two sections. The first is devoted to the history of Cats and Weasels among the ancients; the second to that of the present day.

SCHLOSSER, M. Die Affen, Lemuren, Chiropteren, Insectivoren, Marsupialier, Creodonten, und Carnivoren der Europäischen Tertiars. Pt. ii. Beitr. Pal. Oesterr.-Ung. vii, pp. [1-162], 225-386, pls. vi-ix.

This important memoir is the continuation of the one noticed in Zool. Rec. xxiv, *Mamm.* p. 14, and is devoted to parts of the European Tertiary *Carnivora*, with their relations to existing forms and to those from the American Tertiaries. It is proposed to classify the *Carnivora Vera* as follows:—

A. HYPOMYCTERI.

- | | |
|--------------------------|--|
| 1. <i>Cercoleptidæ</i> . | 4. <i>Æluridæ</i> . |
| 2. <i>Procyonidæ</i> . | 5. <i>Ursidæ</i> (<i>Amphicyonidæ</i> , p. 61). |
| 3. <i>Mustelidæ</i> . | 6. <i>Canidæ</i> . |

B. EPIMYCTERI.

- | | |
|------------------------|-----------------------------|
| 7. <i>Protelidæ</i> . | 11. <i>Suricatidæ</i> . |
| 8. <i>Arctictidæ</i> . | 12. <i>Cryptoproctidæ</i> . |
| 9. <i>Vicerridæ</i> . | 13. <i>Nimravidæ</i> . |
| 10. <i>Cynictidæ</i> . | 14. <i>Felidæ</i> . |
| | 15. <i>Hyenidæ</i> . |

Of these families, Nos. 3, 5, and 6 are treated of in this part. The memoir commences with a discussion of previous classifications and the proposed amendments thereon, after which the families are systematically described. A number of new generic and specific names are proposed, the forms included by Filhol in *Cynodictis* being broken up into several genera, and the *Mustelidæ* also much divided. *Stenoplesictis* and *Palæoprionodon*, which have been previously referred to the *Vicerridæ*, are placed in the *Mustelidæ*. *Cephalogale* is taken to include several of

FILHOL'S *Cynodictis. Plesiogale*, which is referred to the *Mustelidæ*, differs from all others in having three lower molars. [See *Canidæ*, *Ursidæ*, *Mustelidæ*]. Reviewed by E. D. COPE, *Am. Nat.* xxii, pp. 1019 & 1020.

SCOTT, W. B. Origin of American *Carnivora*. *P. Am. Ass.* 1887, p. 258.

An abstract of this paper summarizes its conclusions as to the relations of the American Tertiary forms, in which it is concluded that *Amphicyon* represents an extremely generalized type.

I. PINNIPEDIA.

BALKWILL, F. H. On the Geographical Distribution of Seals. *Zool.* (3) xii, pp. 401-411.

A summary of the chief family characters of Seals, together with an account of the distribution of living forms and a list of the species.

HARRISON, A. J. Remarks about Seals. *P. Bristol Soc.* (2) v, pp. 290-297.

A popular account of some points in the structure and the habits of Seals.

LEBOUQ, H. Recherches sur la Morphologie de la Main chez les Pinnipèdes. *Stud. Mus. Zool. Dundee*, i, pp. ii & 1-8, pl. & woodcuts.

The author concludes that the flippers of the Pinnipeds are not an intermediate step in the development of those of the *Cetacea* (q.v.).

PHILIPPI, R. A. Berechtigung der Synonymie von *Otaria philippii*, Peters, &c. *Arch. f. Nat.* 1888, i, pp. 116-118.

Criticizes and amends Burmeister's synonymy of the species. In *Zool. Gart.* xxix, pp. 310-313, the same writer has observations on various species of *Otaria*; see also p. 345 of same volume.

THEODOR, F. Das Gehirn des Seehundes (*Phoca vitulina*). *Ber. Freiberg Ges.* iii, pp. 72-94, pls. viii-x.

An elaborate memoir, illustrated with eight views of the brain of this Seal. It is concluded that the difference between the brain of the *Pinnipedia* and *Carnivora Vera* is so marked as to indicate that these two groups must have been differentiated at an early Tertiary epoch.

TURNER, W. The Pineal Body (*Epiphysis cerebri*) in the Brains of the Walrus and Seals. *J. Anat. Phys.* xxii, pp. 300-303.

The pineal body is found to be unusually large in the Walrus, and, to a somewhat less extent, in the Seals; and the bearing of this feature on the pineal eye of Reptiles is then discussed.

— Report on the Seals. *Rep. Voyage 'Challenger'* *Zool.* vol. xxvi pt 68, 240 pls., 10 pls., & woodcuts.

This part consists of a description of the skeletons of the Seals collected during the 'Challenger' Expedition; of a revised classification of the *Pinnipedia*; of a description of the brains of the Elephant-Seal and Walrus, and a comparison with those of other *Carnivora* and the

Primates; concluding with observations on the anatomy of the viscera of the Elephant-Seal. An elaborate appendix, by W. C. S. MILLER, is devoted to the myology of the suborder. The species described and figured are named as follows, viz.: *Macrorhinus leoninus*, *Leptonychotes weddelli*, *Otaria jubata*, *Arctocephalus gazella*, *A. australis*.

For Seal-fishery, see SOUTHWELL, *Cetacea*, p. 55.

a. PHOCIDÆ.

Seals occurring in the Essex Blackwater are noticed by E. A. FITCH, Tr. Ess. Club, ii, p. 3.

Halichoerus grypus: note on a living specimen in Berlin, by H. NEHRING, SB. nat. Fr. 1888, pp. 7 & 8.

II. CARNIVORA VERA.

b. FELIDÆ.

CLERICI, E. Sopra alcune specie di Felini della Caverna al Monte delle Gioie presso Roma. Boll. Comm. Geol. (2) ix, pp. 149-167, pl. iv.

Describes and figures jaws of two forms of *Felis* from cave-deposits near Rome, which are referred to *F. leo* (= *Hyperfelis verneuili*, Indes), and *F. catus* (= *F. minima*, Indes).

INVERARITY, J. D. Unscientific Notes on the Tiger. J. Bomb. N. H. Soc. iii, pp. 143-154, 3 pls.

An account of some of the habits of the Tiger, with figures of animals killed and partly eaten by the same.

NEHRING, A. Ueber Haus- und Wildkatzen. Humboldt, vii, pp. 139-141, woodcut.

A popular account of the relations between wild and domestic Cats of various regions.

POULTON, E. B. Observations upon Polydactyle Cats. Rep. Brit. Ass. 1888, p. 707; title only quoted.

From an abstract published in the *Times*, it appears that the author, in continuation of previous researches, was able to place before the section a record of the families down to the tenth generation. The family originated from a cat named "Punch," which had six toes on each foot. This peculiarity appeared, with more or less modification, in a large number of its descendants, some of these having as many as seven toes on each foot, thus possibly indicating an ancestry with even more digits.

STOWELL, T. B. The Glossopharyngeal Nerve in the Domestic Cat. P. Am. Phil. Soc. xxv, pp. 89-94, & pl. The Accessory Nerve in the Same. T. c. pp. 94-99, & pl. The Hypoglossal Nerve in the Same. T. c. pp. 99-104, & pl.

Describes and figures the course of these nerves.

Eusmilus bidentatus: H. FILHOL, Bull. Soc. Philom. (7) xii, pp. 129-134, describes a skull of this species from the Quercy Phosphorites, under the name of *Macherodus bidentatus*.

†*Machærodus schlosseri*, n. sp., A. WEITHOFER, Beitr. Pal. Oesterr.-Ung. vi, p. 233, pl. xi, figs. 1-7, Pliocene, Greece.

†*Machærodus aphanistus (leoninus)*: tarsal bones described and figured by WEITHOFER, l. c. p. 241, pl. x, figs. 12-14.

Felis concolor: J. LEIDY, P. Ac. Philad. 1888, pp. 1 & 2, describes a fossil skull from beds on the Kaskashia river, Illinois.

Felis pardus: J. MENGER, Zool. Gart. xxix, pp. 231-233, gives an instance of a long fast endured by an Indian Leopard.

†*Felis liodon*, n. sp., A. WEITHOFER, Beitr. Pal. Oesterr.-Ung. vi, p. 242, pl. xi, fig. 8, Pliocene, Greece.

c. HYENIDÆ.

CHAPMAN, H. C. Observations on the Female Generative Apparatus of *Hyæna crocuta*. P. Ac. Philad. 1888, pp. 189-191, pls. ix-xi.

Explains the remarkable resemblance existing between the external generative organs of the male and the female of the Spotted Hyæna.

WEITHOFER, K. A. Die fossilen Hyænen des Arnethales in Toiskana. Ans. Ak. Wien, 1888, pp. 201 & 202.

Records 3 species from the Pliocene and Pleistocene of the Val d'Arno, viz.: *H. topariensis*, Major, allied to *H. perrieri*; *H. robusta* (n. sp.), allied to *H. arvernensis*; and *H. crocuta*.

YOUNG, A. H., & ROBINSON, A. Anatomy of *Hyæna striata*. Part I. J. Anat. Phys. xxiii, pp. 90-105, woodcut.

This first part of the paper is devoted to the consideration of the viscera, which are compared with those of *H. crocuta*.

†*Hyæna robusta*, n. sp., K. A. WEITHOFER, l. c., Pliocene, Italy.

d. VIVERRIDÆ.

JENTINK, F. A. On *Helogale parvula*, Sundevall. Notes Leyd. Mus. xi, pp. 31-33.

Considers that *H. undulata* is identical with this species.

PUIGGENER, J., An. Soc. Esp. xvii, Acta pp. 93-95, discusses Trouessart's identification of *Hesperetes widdringtonii*, Gray, with *H. ichneumon*.

SCLATER, W. L. Remarks on *Paradoxurus*. P. A. S. B. 1888, pp. 124 & 125.

Notifies a specimen of *P. jerdoni*, and another of *P. macrodus*, from Malacca; considers that *P. niger* is identical with *P. hermaphroditus (musanga)*.

†*Palæoprionodon minutus*, n. sp., SCHLOSSER, l. c. [suprà, p. 27] p. 371, Quercy Phosphorites; placed by its founder in the *Mustelidæ*.

e. CANIDÆ + URSIDÆ.

FLOWER, W. H. Article, "Wolf." Encycl. Brit. 9th ed. xxiv, pp. 628 & 629.

D. GRONEN, Zool. Gart. xxix, pp. 237-241, has notes on the Wolf in Russia. B. LANGKAVEL, *t. c.* pp. 364-373, gives observations on the Wolves of North America.

*LANDRIN, A. *Traité sur le Chien*. Paris: 1888, 12mo.

LATASTE, F. Le Première Premolaire du Chien est elle monophysaire ou diphysaire? *Le Nat.* 1888, pp. 21 & 22.

Concludes that this tooth is really a successional one.

SLEEMAN, W. Wolves Nurturing Children in their Dens. *Zool.* (3) xii, pp. 87-98. [See also p. 221 of same.]

A reprint of a pamphlet published in 1852.

P. L. SCLATER, P. Z. S. 1888, pp. 1 & 2, gives a list of 36 species of *Canis* living in the Zoological Society's Gardens.

Canis jubatus: figured by M. WEBER, *Bijdr. Dierk.* 1888, pt. v, pl. ii; skull described by H. NEHRING, *SB. nat. Fr.* 1888, pp. 4-7.

Canis lupus: notes on its chase in Russia given by L. LESÈBLE, in *Bull. Soc. Acclim.* (4) v, pp. 913-917.

Canis (Vulpes) macrotis, n. sp., C. H. MERRIAM, *P. Biol. Soc. Wash.* iv, pp. 135-138, S. California.

†*Pachycynodon*, n. g., M. SCHLOSSER, *t. c.* [*suprà*, p. 27] p. 253. Type, *Cynodictis crassirostris*, Filh., Quercy Phosphorites.

†*Pachycynodon filholi*, n. sp., SCHLOSSER, *t. c.* p. 254, *ibid.*

†*Pseudamphicyon*, n. g., SCHLOSSER, *t. c.* p. 301. Types, *Cynodictis crassidens* and *Amphicyon ambiguus*, Filhol, Quercy Phosphorites.

†*Pseudamphicyon lupinus*, n. sp., SCHLOSSER, *t. c.* p. 303, Bohnertz, Ulm.

†*Hyænarcos anthracitis*, n. sp., A. WEITHOFER, *Boll. Com. Ital.* (2) ix, p. 368. Type, *Amphicyon laurillardi*, Meneghino, Miocene, Tuscany.

†*Hyænarcos minutus*, n. sp., E. KOKEN (*ex* SCHLOSSER), *SB. nat. Fr.* 1888, pp. 44-49, figs. 1 & 2, Miocene, Silesia.

†*Hyænarcos atticus*, n. sp., A. WEITHOFER (*ex* DAMES), *Beitr. Pal. Oesterr.-Ung.* vi, p. 231, pl. xii, figs. 1 & 2, Pliocene, Greece.

†*Hyænarcos*, sp.: an ulna from the Indian Siwaliks described and figured by R. LYDEKKER, *Rec. Geol. Surv. Ind.* xxi, pp. 145 & 146, fig. 1.

KELLY, A. Notes on the Myology of *Ursus maritimus*. *P. Ac. Philad.* 1888, pp. 141-154.

Describes the most noteworthy characters in the myology of the limbs of a female.

OSTALET, E. L'Ours Noir d'Amerique. *La Nature*, 1888, pp. 168-170, 218, 219, 250, & 251, pl.

A popular illustrated account of the American Black Bear.

f. PROCYONIDÆ.

DAWKINS, W. B. On *Ailurus anglicus*, a new Carnivore from the Red Crag. Q. J. Geol. Soc. xliv, pp. 228-231, pl. x.

Describes and figures a fragment of a mandible with last true molar from the Red Crag, which is referred to the genus *Ælurus*, a mandible of the recent *Æ. fulgens* being figured for comparison.

†*Æ[Ai]lurus anglicus*, n. sp., W. B. DAWKINS, l. c., Pliocene, England.

WINDLE, B. C. A. On the Limb Myology of *Procyon cancrivorus* and of the *Ursidæ*. J. Anat. Phys. xxiii, pp. 81-89.

A preliminary account of the chief features of the myology of this species of *Procyon*.

g. MUSTELIDÆ.

T. SPEEDY has popular notes on Stoats and Weasels in Tr. Edinb. Nat. Club, ii, pp. 166-173.

TUCKERMAN, F. The Tongue and Gustatory Organs of *Mephitis mephitis*. Q. J. Micr. Sci. xxviii, pp. 149-168. [Omitted from Zool. Rec. xxiv.]

A detailed account of the structure and distribution of the taste-bulbs in this species.

— On the Gustatory Organs of *Putorius vison*. Anat. Anz. iii, pp. 941 & 942.

A brief description of the chief histological features of the taste-organs of this species.

Meles taxus: an account of its structure and habits, with a figure, given by J. E. HARTING, Zool. (3) xii, pp. 1-13, pl. i.

Mustela martes: LANDOIS, J. Ber. westf. Ver. 1888, pp. 10 & 11, has observations (with measurements) on a young individual. C. F. WIEPHEN, Zool. Gart xxix, p. 313, records albinoid individuals of this species and *M. foina*.

Putorius lutreolus: figured by H. G. DE KERVILLE, *vide supra*, p. 11, and described and figured by E. OLIVIER, Rev. Sci. Bourb. i, pp. 241-243.

†*Mustela palustrica*, n. sp., A. WEITHOFER, Beitr. Pal. Oesterr.-Ung. vi, p. 226, pl. x, figs. 1-11, Pliocene, Greece.

†*Mustela tarteti*, n. sp., H. FILHOL, Bull. Soc. Philom. (7) xii, pp. 25-30, Miocene, Sansan (Gers).

†*Mustela majori*, n. sp., A. WEITHOFER, Boll. Com. Ital. (2) ix, p. 366, Miocene, Tuscany.

Galictis vittata. [See SCHÄFF, *supra*, p. 19.]

†*Plesiocyon typicus*, n. g. & sp., SCHLOSSER, l. c. [*supra*, p. 27] pp. 117 & 118, Quercy Phosphorites; = *Cynodictis dubius*, Filhol, the specific name being considered inappropriate.

The following forms are included by their founder in this family, although several of them have been referred to the *Felidæ* :—

- †*Haplogale*, n. g., SCHLOSSER, t. c. p. 372. Types, *Proaelurus medius*, *P. julieni*, var. *priscus*, and *Plesictis mutata*, Filhol, Quercy Phosphorites.
 †*Stenogale*, n. g., SCHLOSSER, t. c. p. 375. Types, *Plesiogale gracilis* and *Pseudalurus intermedius*, Filhol, Quercy Phosphorites.
 †*Stenogale aurelianensis*, n. sp., SCHLOSSER, t. c. p. 377, Miocene, France.
 †*Pseudictis guntiana*[us], n. g. & sp., SCHLOSSER, t. c. p. 379, Mid. Miocene, France.

III.—CREODONTA.

h. PROVIVERRIDÆ.

- †*Onychodectes tisonensis*, n. g. & sp., E. D. COPE, Tr. Am. Phil. Soc. xvi, pp. 317 & 318, Peurco Eocene, U.S.A.
 †*Mioclænus bathygnathus*, n. sp., COPE, t. c. p. 321, *ibid.*
 †*Mioclænus pentacus*, n. sp., COPE, t. c. p. 325, *ibid.*
 †*Mioclænus gaudrianus*, n. sp., COPE, t. c. p. 326, *ibid.*
 †*Mioclænus lydekkerianus*, n. sp., COPE, t. c. p. 328, *ibid.*
 †*Mioclænus filholianus*, n. sp., COPE, t. c. p. 329, *ibid.*
 †*Mioclænus flowerianus*, n. sp., COPE, t. c. p. 330, *ibid.*
 †*Mioclænus turgidunculus*, n. sp., COPE, t. c. p. 334, *ibid.*
 †*Mioclænus zittelianus*, n. sp., COPE, l. c., *ibid.*
 †*Chriacus priscus*, n. sp., COPE, t. c. p. 337, *ibid.*
 †*Chriacus schlosserianus*, n. sp., COPE, t. c. p. 338, *ibid.*
 †*Chriacus ruelemeyeranus*, n. sp., COPE, t. c. p. 340, *ibid.*
 †*Chriacus stenops*, n. sp., COPE, t. c. p. 341, *ibid.*
 †*Chriacus inversus*, n. sp., COPE, t. c. p. 342, *ibid.*
 †*Triisodon biculminatus*, n. sp., COPE, p. 343, *ibid.*

3. INSECTIVORA.

For the Indian species, see W. T. BLANFORD, *suprà*, p. 3.

I. INSECTIVORA VERA.

a. ERINACEIDÆ.

LECHE, W. Ueber einige Entwicklungsstadien der Hypophysis Cerebri. Verh. Ver. Biol. Stockh. i, pp. 53-57, woodcuts.

Describes a peculiarity in the development of the hypophysis cerebri in *Erinaceus europæus*, which is unknown in any other Mammals.

KIEBEL, F. Zur Entwicklungsgeschichte des Igels (*Erinaceus europæus*). Anat. Anz. iii, pp. 631-637, woodcut.

Gives a detailed description of the development of the Hedgehog, with a figure showing the mode of formation of the amnion and allantois.

Erinaceus europæus, MISS ABBS, Nat.-Hist. Tr. North Durham, x, pp. 214-218, has notes on young specimens.

1888. [VOL. XXV.]

Hylomys suillus, n. var. *dorsalis*, O. THOMAS, Ann. N. H. (6) ii, p. 407, Mt. Kina Balu, N. Borneo.

b. TUPAIIDÆ.

†*Lantanotherium sansaniense*, n. g. & sp., H. FILHOL, Bull. Soc. Philom. (7) xii, pp. 25 & 26, Miocene, Sansan (Gers.)

c. TALPIDÆ.

HEAPE, W. The Development of the Mole (*Talpa europæa*): Stages E to J. Stud. Morph. Lab. Cambridge, iii, pp. 105-146, pls. xiii-xv.

A continuation of the memoir quoted in Zool. Rec. xxiii, *Mamm.* p. 17.

Talpa europæa. LANDOIS, J. Ber. westf. Ver. 1888, p. 12, notices a parti-coloured specimen. J. SOUTHWELL, Zool. (3) xii, pp. 21 & 22, has notes on its habits. W. H. WATSON, t. c. p. 387, records a white specimen from Scotland. R. CANESTRINI, Bull. Soc. Ven.-Treut. iv, p. 84, describes a white example from Padua.

Condylura cristata, recorded by W. B. EVERMANN, Am. Nat. xxii, p. 359, from Indiana.

d. SORICIDÆ.

DOBSON, G. E. Descriptions of two New Species of Indian *Soricidæ*. Ann. N. H. (6) i, pp. 427-429.

Describes 2 new species of *Crocidura*, belonging to the so-called sub-genus *Pachyura* (*vide infra*).

JENTINK, F. A. On the Shrews from the Malayan Archipelago. Notes Leyd. Mus. x, pp. 161-167.

Gives a list of all the previously described species of Shrews from this region, and describes 6 new species. *Pachyura* is recognized as a genus (*vide infra*).

Crocidura fuliginosa, n. var. *trichura*, DOBSON, P. Z. S. 1888, p. 532, Christmas I.

Crocidura leucogenys, n. sp., G. E. DOBSON, Ann. N. H. (6) i, p. 428, India (Ajmir).

Crocidura dayi, n. sp., DOBSON, l. c. India (Madras).

Crocidura mackloti, n. sp., F. A. JENTINK, Notes Leyd. Mus. x, p. 164, Timor.

Crocidura brunnea, n. sp., JENTINK, l. c., Java and Sumatra.

Crocidura neglecta, n. sp., JENTINK, l. c. p. 165, Sumatra.

Crocidura rosmari, n. sp., JENTINK, l. c., Banka.

Crocidura (*Pachyura*) *muelleri*, n. sp., JENTINK, l. c. p. 166, Timor.

Crocidura (*Pachyura*) *unicolor*, n. sp., JENTINK, l. c., Ternate.

Crocidura buettikoferi, n. sp., JENTINK, l. c. p. 47, Liberia.

Crocidura stampflii, n. sp., JENTINK, l. c., Liberia.

Crocidura (*Pachyura*) *negulura*, n. sp., JENTINK, l. c. p. 48, Liberia.

II. DERMOPTERA.

LECHE, W. Ueber die Säugethiergattung *Galeopithecus*. Sv. Ak. Handl. xxi, pt. xi, pp. 1-92, pls. i-v, 1886 (volume dated 1884-1885). [Omitted from previous Records.]

An important memoir on the structure and serial position of *Galeopithecus*, illustrated with plates of the myology, &c.

4. CHIROPTERA.

BLANFORD, W. T. Notes on Indian *Chiroptera*. J. A. S. B. lvii, pp. 260-272.

Contains notes on the nomenclature, distribution, &c., of several species of Indian Bats, all of which are incorporated in the "Manual of Indian Mammalia" (*suprà*, p. 3). The generic term *Hipposiderus* is adopted in place of *Phyllorhina*, and *Xantharpyia* instead of *Cynonycteris*. The paper concludes with a list of 55 species of *Chiroptera* given by Jerdon, and the amended nomenclature proposed, several of these names being reduced to the rank of synonyms. The name *Rhinolophus tragatus*, adopted by Jerdon, is retained for the Indian Bat commonly identified with *R. ferrum-equinum*.

I. MEGACHIROPTERA.

a. PTEROPODIDÆ.

Pteralopex atrata, n. g. & sp., O. THOMAS, Ann. N. H. (6) i, p. 155, Solomon Is. Figured, P. Z. S. 1888, pls. xx & xxi.

Pteropus woodfordi, n. sp., THOMAS, *l. c.* p. 156, *ibid.* Figured, P. Z. S. 1888, pls. xx & xxi.

Pteropus coronatus, n. sp., THOMAS, P. Z. S. 1888, p. 471, pls. xx, fig. 2, & xxi, figs. 2 & 3, Duke of York Archipelago.

Epomophorus reidkumpii, n. sp., F. A. JENTINK, Notes Leyd. Mus. x, p. 51, Liberia.

II. MICROCHIROPTERA.

b. RHINOLOPHIDÆ.

Anthops ornatus, n. g. & sp., O. THOMAS, Ann. N. H. (6) i, p. 156, Solomon Is. Nose-leaf figured, P. Z. S. 1888, pl. xxii, fig. 1.

c. VESPERTILIONIDÆ.

°FROMMEL, R. Ueber die Entwicklung der Placenta von *Myotis murinus*. Wiesbaden: 1888, 8vo, illustrated.

TRUE, F. W. Note on *Vesperugo hesperus* (Allen). P. U. S. Nat. Mus. x, p. 515.

Refers *Scotophilus hesperus*, Allen, to the genus *Vesperugo*, and considers that *V. merriami*, Dobson, is identical. The locality given by Dobson is amended.

TUCKERMAN, F. Observations on the Gustatory Organs of the Bat (*Vespertilio subulatus*). J. Morph. ii, pp. 1-6, pl. i.

This paper describes and figures in detail the taste-organs in the tongue of this Bat.

VAN BENEDEN, E. De la Fixation du Blastocyste à la Muqueuse Utérine chez le Murin (*Vespertilio murinus*). Bull. Ac. Belg. (3) xv, pp. 17-27.

The long list of conclusions at which the author arrives are summed up on p. 26 of his memoir. The plate of which an explanation is given on p. 27, has never been issued (see p. 263 of same volume).

—. De la Formation et de la Constitution du Placenta chez le Murin (*V. murinus*). T. c. pp. 351-364.

As in the preceding memoir, the author's conclusions as to the placentation of this Bat are summed up under several headings.

Vesperugo stampflii, n. sp., F. A. JENTINK, Notes Leyd. Mus. x, p. 54, Liberia.

Vespertilio mystacinus: notes and figures of British examples of this species given by J. E. HARTING, Zool. (3) xii, pp. 161-166 & 441, pls. ii & iii. Recorded by T. A. COWARD, t. c. p. 223, from Cheshire.

Vespertilio ciliolabrum, n. sp., C. H. MERRIAM, P. Biol. Soc. Washington, iv, pp. 1-4, W. United States.

Nyctophilus microtis, n. sp., O. THOMAS, Ann. N. H. (6) ii, p. 226, New Guinea.

5. RODENTIA.

BIEHRINGER, —. Ueber die Umkehrung der Keimblätter bei der Scheermaus (*Arvicola amphibius*, Desm.). Arch. Anat. Phys. 1888, Anat. Abth. pp. 279-286, pl. xvii.

An account of the mode of inversion of the fœtal-membranes in *Arvicola*.

COPE, E. D. The Mechanical Causes of the Origin of the Teeth of the Rodentia. Am. Nat. xxii, pp. 3-13, 9 woodcuts.

The Rodents are considered to be derived from Tillodonts (Tæniodonts), allied to *Psittacotherium* of the Puercæ Eocene, and consequently that their incisors correspond to the second of the typical series. It is then argued that the large size of the incisors has originally caused a backward thrust in the mandible, which has resulted in the disappearance of the postglenoid process, and the capability of a fore-and-aft motion. This has been accompanied by changes in the insertion of muscles, and the gradual development of the present type of skull and dentition. Figures are given of skulls of *Rodentia*, *Tillodontia*, and *Multituberculata*.

GIACOMINI, C. Sur le Canal Neurentérique et sur le Canal Anal dans les Vesicules Blastodermiques du Lapin. Arch. Biol. Ital. x, pp. 273-294, pl.

Observations on the histology of these canals in the Rabbit.

HOWES, G. B. Rabbit with an Intranarial Epiglottis, with a Suggestion concerning the Phylogeny of the Mammalian Respiratory Apparatus. *J. Anat. Phys.* xxiii, pp. 263-272, woodcut.

Describes two instances of this abnormality in the Rabbit, and records cases of its occurrence in other groups of terrestrial Mammals. Suggests that it may be a reversion to an ancestral type.

LATASTE, F. Enveloppe Vaginale et Vaginite Exfoliante des Rongeurs. *C.R. Soc. Biol.* (8) v, pp. 705-707.

——. Enveloppe du Bouchon Vaginal des Rongeurs. *T. c.* pp. 732 & 733.

——. Matière du Bouchon Vaginal des Rongeurs. *T. c.* pp. 817-821.

These three papers treat of a peculiar organ, termed the vaginal plug, found in the Rodent vagina, and describe its structure, homology, secretions, &c.

——. Notes sur Différentes Espèces de l'Ordre des Rongeurs observées en Captivité. *Ac. Soc. L. Bord.* (4) x, pp. 321-466, pls. ix-xi, and (5) i, pp. 202-301.

A continuation of the memoir quoted in *Zool. Rec.* xxiv, *Mamm.* p. 32. This part has an elaborate history of the habits of the following forms, viz.: *Eliomys dryas*, *Muscardinus avellanarius*, *Gerbillus* (*Pachyuromys*) *duprasi*, *G. hirtipes*, *G. (Dipodillus) campestris*, *G. simoni*, *Meriones shawi*, *M. longifrons*, *Cricetus cricetus*, *Mus (Lemniscomys) barbarus*, *M. sylvaticus*, and *M. musculus*. Figures are given of *Gerbillus duprasi*, *G. hirtipes*, and *G. simoni*, together with a plate of their skulls.

MARTIN, E. Ueber die Anlage der Urniere beim Kaninchen. *Arch. Anat. Phys.* 1888, *Anat. Abth.* pp. 109-123, pl. vii.

Observations on the mode of formation and structure of the Wolffian bodies in the Rabbit.

MASICS, J. De la Genèse du Placenta chez le Lapin. *Bull. Ac. Belg.* (3) xvi, pp. 317-325.

The author concludes that the placenta of the Rabbit is of fœtal origin, formed by the allantoid villousities which ramify in a tissue derived entirely from the epiblast of the embryo, and that the maternal blood consequently circulates in a mass of epiblastic tissue of fœtal origin.

RYDER, J. A. Vestiges of Zonary Decidua in the Mouse. *Am. Nat.* xxi, pp. 1037 & 1038. [Omitted from *Zool. Rec.* xxiv.]

The data seem to show that the primitive type of placentation was more diffuse than in existing Myomorphous Rodents, and throw light on the derivation of a discoidal from a zonary placentation.

VICE, W. A. The Teeth in the Order *Rodentia*. *Tr. Leicester Soc.* 1888, pp. 16-19.

A brief summary of the chief features of Rodent dentition.

WINGE, H. The article quoted in *Zool. Rec.* xxiv, *Mamm.*, p. 32, appears, with a summary in French, in the complete volume of the serial, under date 1888, although the copy quoted is dated 1887.

I. RODENTIA SIMPLICIDENTATA.

a. ANOMALURIDÆ.

Anomalurus chrysophæus, n. sp., A. DUBOIS, Bull. Soc. Z. Fr. xiii, pp. 23 & 24, Landana, W. Africa.

Anomalurus pusillus [Zool. Rec. xxiv, *Mamm.* p. 32] figured by O. THOMAS, P. Z. S. 1888, pl. i.

b. SCIURIDÆ.

TAYLOR, W. E. Local Variations in the Colours of a few Nebraska Flying Squirrels. Am. Nat. xxii, pp. 744 & 745.

Describes specimens confirming the observations of COLES and ALLEN as to the local variation in colour of *Sciuropterus volucella*.

THOMAS, O. On *Eupetaurus*, a new form of Flying Squirrel from Kashmir. J. A. S. B. lvii, pp. 256-260, pls. xxii & xxiii.

Describes and figures a flying Squirrel, distinguished from all other members of the family by its hypsodontism, occurring in N.W. Kashmir. Also has some remarks on Hypsodontism (*vide infra*).

Sciuropterus hageni, n. sp., F. A. JENTINK, Notes Leyd. Mus. xi, p. 26, E. Sumatra.

Eupetaurus cinereus, n. g. & sp., O. THOMAS, J. A. S. B. lvii, pp. 256-260, pls. xxii & xxiii, N.W. Kashmir.

Sciurus concinnus, n. sp., O. THOMAS, Ann. N. H. (6) ii, p. 407, Isabella, Basilan, Phillipines.

Spermophilus erythrogenys, figured by E. BÜCHNER, Wissenschaft Result. Przewalski Reisen (*suprà*, p. 4), Zool. Theil. Säugeth. pt. i, pla. i & iv, figs. 1-3 (skull).

Spermophilus alaschanicus, n. sp., BÜCHNER, *t. c.* p. 11, pl. ii, fig. 1, Alaschan, Central Asia.

Spermophilus obscurus, n. sp., BÜCHNER, *t. c.* p. 17, pl. ii, fig. 2, and pl. iv, fig. 7-9 (skull), Ganssu, Central Asia.

Spermophilus eceramanni, skull figured by BÜCHNER, *t. c.* pl. iv, figs. 4-6.

Spermophilus beldingi, n. sp., C. H. MERRIAM, Ann. N. York Ac. iv, pp. 317-321, woodcut (advance copy), California.

Arctomys dichrous, figured by BÜCHNER, *t. c.* pl. iii, and skull, pl. v, figs. 11-14.

Cynomys ludoricianus: W. HAACKE, Zool. Gart. xxix, pp. 321-329, has notes on its habits, with a figure.

c. CASTORIDÆ.

GEOFFROY ST. HILAIRE, A. Renseignements sur les Castors du Rhone. Bull. Soc. Acclim. (4) v, pp. 321-324.

Notes on three Beavers captured in the Rhone, together with observations on the habits of these animals.

d. MYOXIDÆ.

Myoxus glis: C. COESTER, Zool. Gart. xxix, pp. 359-364, has observations on its habits in captivity.

Myoxus quercinus: the paper by F. HELM, quoted in Zool. Rec. xxiv, Mamm. p. 33, is translated in Zool. (3) xii, pp. 14-16.

Muscardinus arellanarius: A. MÜLLER, t. c. pp. 247 & 248, describes its condition and weight during hybernation.

Graphiurus nuytglassii, n. sp., F. A. JENTINK, Notes Leyd. Mus. x, p. 58, Liberia.

Clurigliis crassicaudatus, n. g. & sp., JENTINK, t. c. p. 41, Liberia.

e. MURIDÆ.

FORSYTH-MAJOR, C. J. Sulla Conformazione dei Molare nel genere *Mus*, e sul *Mus meridionalis* di Costa e *Mus orthodon*, Hensel. P.-v. Soc. Tosc. 1888, pp. 129-145.

Firstly, *Mus meridionalis* is described; this is followed by a discussion on the characters of the molars in European species of *Mus*, after which those of *M. meridionalis* are compared. Finally, the Pleistocene *M. orthodon* is described, and considered to belong to the *M. sylvaticus* group.

HUET, J. Sur une nouvelle Espèce de Rat de Landana, cote occidentale d'Afrique. Le Nat. 1888, pp. 143 & 144, woodcuts.

Describes and figures a Rat, under the name *Golunda campanæ*, from W. Africa.

HUTTON, F. W. Note on the Rat that Invaded Picton in 1884. Tr. N. Z. Inst. xx, p. 48.

After an examination of several skulls, considers that the Rat in question should be referred to *Mus maurium*.

LATANTE, F. Le *Pachyuromys*, et ses mœurs. Le Nat. 1888, pp. 181, 182, & 191-193, woodcuts.

A descriptive article, with figures of this Rodent.

THOMAS, O. Article, "Vole." Encycl. Brit., 9th ed. xxiv, pp. 277 & 278.

A brief account of the genus *Arvicola*, with special reference to the British species, and a figure of the dentition of *A. amphibius*.

— On a New and Interesting Annectant Genus of *Muridæ*, with Remarks on the Relations of the Old- and New-World Members of the Family. P. Z. S. 1888, pp. 130-135, pl. v.

Describes, with figures of the skull and dentition, a Murine from the Lower Congo, under the name of *Deomys*, which presents characters connecting the *Murina* with the *Cricetina*. It is concluded that the genus *Hesperomys*, which, on the ground of priority, is not entitled to stand, must be merged in *Cricetus*.

[THOMAS, O.] Description of a New Genus and Species of Rat from New Guinea. *T. c.* pp. 237-240, 2 woodcuts.

Describes a new Rat under the name *Chiruromys*, characterized by its prehensile tail and the complexity of its dentition. Figures are given of the skull, dentition, and part of the tail (*vide infra*).

TUCKERMAN, F. The Tongue and Gustatory Organs of *Fiber sibethicus*. *J. Anat. Phys.* xxii, pp. 135-141, pl. vii.

An account of the taste-bulbs and papillæ in this Rodent.

Mus imperator, n. sp., O. THOMAS, *Ann. N. H.* (6) i, p. 157, Solomon Is. Figured, *P. Z. S.* 1888, pl. xxii, figs. 2 & 3.

Mus rex, n. sp., THOMAS, *l. c. ibid.* Figured, *P. Z. S.* 1888, pl. xxii, figs. 4 & 5.

Mus prator, n. sp., THOMAS, *t. c.* p. 158, *ibid.* Figured, *P. Z. S.* 1888, pl. xxii, fig. 6.

Mus alticola, n. sp., THOMAS, *t. c.* p. 408, Mt. Kina Balu, N. Borneo.

Mus infralutens, n. sp., THOMAS, *t. c.* p. 409, *ibid.*

Mus nativitatis, n. sp., THOMAS, *P. Z. S.* 1888, p. 533, Christmas Is.

Chiruromys forbesi, n. g. & sp., O. THOMAS, *t. c.* pp. 237-240, figs. 1 & 2, New Guinea.

Golunda campanæ, n. sp., J. HUET, *Le Nat.* 1888, pp. 143 & 144, woodcut, W. Africa.

Gerbillus przewalskii, n. sp., E. BÜCHNER, *Wissenschaft. Result. Przewalski. Reisen (suprà, p. 4).* *Zool. Theil.-Säugeth.* pt. i, pl. iv, figs. 10-14 (skull), Central Asia.

Gerbillus roborowskii, n. sp., BÜCHNER, *t. c.* pl. v, figs. 1-10 (skull), *ibid.*

Gerbillus (Pachyuromys) duprasi, figured by F. LATASTE, *Act. Soc. L. Bord.* (4) x, pl. ix. *G. hirtipes*, by the same, pl. x, and also *G. (Dipodillus) simoni*, pl. x.

Deomys ferrugineus, n. g. & sp., O. THOMAS, *P. Z. S.* 1888, p. 130, pl. v, Lower Congo (*vide suprà*).

Cricetus (Hesperomys) anthonyi, n. sp., C. H. MERRIAM, *P. Biol. Soc. Washington*, iv, pp. 5-8, New Mexico.

Myodes torquatus: A. NEHRING, *SB. nat. Fr.* 1888, p. 83, proposes to adopt the generic name *Misoothermus* for this species.

Arvicola œconomus recorded by A. NEHRING, *t. c.* pp. 80-85, from the Pleistocene of Germany. Its right to distinction from *A. ralticeps* discussed and confirmed. Other Pleistocene Rodents also noticed.

Arvicola (Myonomes) longicauda, n. sp., C. H. MERRIAM, *Am. Nat.* xxii, pp. 934 & 935, woodcut, Dakota.

Arvicola austerus, n. var. *minor*, C. H. MERRIAM, *t. c.* pp. 598-601, Minnesota and Dakota. Woodcut of skull and dentition.

Arvicola pallidus, n. sp., MERRIAM, *t. c.* pp. 702-705, Dakota. Woodcut of skull and dentition.

Arvicola glaurolus: recorded by J. SUTTON, *Zool.* (3) xii, p. 23, from Durham; by R. P. HARPER, *l. c.*, from Yorks; by W. FINCH, *l. c.*, from Notts; by F. HEAD, *t. c.* p. 24, from Sussex; and by M. BROWNE, *t. c.* p. 65, from Leicester.

Evotomys dawsoni, n. sp., C. H. MERRIAM, Am. Nat. xxii, pp. 650 & 651, Canada. Woodcut of teeth.

Evotomys carolinensis, n. sp., MERRIAM, Am. J. Sci. (3) xxxvi, p. 460, Roan Mountain, N. Carolina.

f. GEOMYIDÆ.

TRUE, F. W. Description of *Geomys personatus* and *Dipodomys compactus*, two New Species of Rodents from Padre Island, Texas. P. U. S. Nat. Mus. 1888, pp. 159 & 160.

Geomys personatus, n. sp., F. W. TRUE, t. c. p. 159, Padre I., Texas.

Dipodomys compactus, n. sp., TRUE, t. c. p. 160, *ibid.*

g. OCTODONTIDÆ.

†*Ctenomys formosus*, n. sp., F. P. MORENO, Bol. Mus. La Plata, 1888, p. 15, Tertiary, S. America.

†*Myopotamus australis*, n. sp., MORENO, l. c., Tertiary, S. America.

Loncheres guianæ, n. sp., O. THOMAS, Ann. N. H. (6) ii, p. 326, British Guiana. See also Timehri (2) ii, pp. 382 & 383.

h. HYSTRICIDÆ.

Hystrix cristata: its distribution in Spain discussed by ADAME, Ann. Soc. Esp. xvii, pp. 118-121.

i. CHINCHILLIDÆ.

†*Lagostomus angustidens*, n. sp., F. P. MORENO, Bol. Mus. La Plata, 1888, p. 15, Tertiary, S. America.

†*Lagostomus intermedius*, n. sp., MORENO, l. c., Tertiary, S. America.

j. CAVIIDÆ.

†*Hydrochærus lydekkeri*, n. sp., F. P. MORENO, Bol. Mus. La Plata, 1888, p. 16, Tertiary, S. America.

II. RODENTIA DUPLICIDENTATA.

k. LEPORIDÆ.

Lepus timidus: K. ECKSTEIN, Zool. Gart. xxix, pp. 345 & 346, notices abnormal colouration; J. C. MANSEL-PLEYDELL, Zool. (3) xii, pp. 259 & 260, records the birth of five young in one litter.

6. UNGULATA.

GAUDRY, A. Sur les Dimensions Gigantesques de quelques Mammifères Fossiles. C.R. cvii, pp. 309-311, and La Nature, 1888, pp. 401-404, woodcuts.

Discusses the height of certain Proboscideans, and concludes that *Dino-*

therium giganteum was the largest, next to which was *Elephas antiquus*, then *E. meridionalis*, *Mastodon ohioiticus* (*americanus*), and *E. primigenius*. In *La Nature* a figure is given of *Dinotherium* and *Elephas primigenius*.

NEUBING, A. Ueber den Einfluss der Domestication auf die Grösse der Thiere, namentlich über Grössenunterscheide zwischen wilden und zahmen Grunzochsen (*Porphygus grunniens*). SB. nat. Fr. 1888, pp. 133-141.

Gives measurements of different portions of the skeleton of wild and domesticated Yaks.

PAVLOW, M. Etudes sur l'Histoire Paléontologique des Ongulés—pt. ii. Le Développement des *Equidæ*, pt. iii. The *Rhinocerotidæ* and *Tapiridæ*. Bull. Mosc. 1888, pp. 135-182, pls. i & ii.

A continuation of a previous paper [Zool. Rec. xxiv, *Mamm.* p. 37]. The second part gives a general review of previous writings regarding the evolution of the *Equidæ* (including *Palæotheriida*, &c.), followed by a discussion on the same subject, in the course of which some interesting observations are made on foot-structure and on the alleged atavistic characters of the milk-molars. It is considered that *Hipparion* is not the ancestor of *Equus*. The third part discusses the *Rhinocerotidæ* and *Tapiridæ* in a much briefer manner. One plate illustrates the dentition of the *Equidæ* and allied families; while the second* is devoted to the foot-structure of *Anchitherium* and *Hipparion*. This memoir is reviewed by COPE, in *Am. Nat.* xxii, pp. 448 & 449, where a new generic term is proposed [see *Equitæ*].

I. PROBOSCIDEA.

ARCELIN, A. Le Mammoth et le Déluge. Rev. Quest. Sci. xii, pp. 38-67.

A review of the work by Howorth noticed in Zool. Rec. xxiv, *Mamm.* p. 38, with certain objections to the theories there propounded.

DUGES, A. El Parto de una Elefanta. Nat. Mex. (2) i, pp. 43 & 44, pl. v, figs. 1-3.

Describes the birth of an Elephant-calf in captivity.

WEITHOFER, K. A. Einige Bemerkungen über den Carpus der Proboscidiæ. Morph. JB. xiv, pp. 507-516.

Criticises Cope's description of the Proboscidean carpus, and shows that in some cases there may be a certain amount of alternation of the bones of the proximal and distal rows. The relations of the *Proboscidea* to the other Ungulate suborders are then discussed; and the paper concludes with some supplemental notes on the carpus of *Elephas africanus*, *E. indicus*, and *E. primigenius*.

c. ELEPHANTIDÆ.

For the fossil Elephants of Java, see MARTIN, *suprà*, p. 14. II. POHLIG, SB. niederrhein. Ges. 1888, p. 46, has observations on remains of Dwarf Elephants from Sicily, and proposes to refer them to a race of

Elephas priscus, Pohlig (*non* Goldfuss), as *E. (priscus) falconeri*, Pohlig (*non* Busk). See also SB. Ver. Rheinl. 1888, p. 46.

BURMEISTER, H. Bericht über *Mastodon antium*. SB. Ak. Berlin, pp. 717-729, and Math. naturw. Mitt. vi, pp. 465-477.

Points out the confusion which has been made between *Mastodon andium* and *M. humboldti*, and describes skulls of both species in the Museum at Buenos Ayres. Proposes to amend the spelling of the former to *M. antium*. [There is the earlier name, *M. cordillerum*.—R. L.]

BUCHENAT, F. Mammät-Stosszahn aus der Weser bei Nienburg. Abh. Ver. Brem. x, pp. 159 & 160

Describes an unusually large tusk of a Mammoth from the valley of the Weser.

CALDERÓN-Y-ARANA, S. Nota sobre la Existencia del *Elephas antiquus* en Andalucía. An. Soc. Esp. xvi, Acta, pp. 45-50; see also pp. 30-32. [Omitted from Zool. Rec. xxiv.]

Refers remains from the Pleistocene of Andalusia, which have been considered to belong to *E. armeniacus*, to *E. antiquus*, and notices some of the chief characters of that and allied species.

—. Existencia del *Elephas (meridionalis) trogontherii*, Pohlig, en Sevilla. Op. cit. xvii, pp. 32-34.

Records molars of this form from Seville.

CAPELLINI, G. Sui Resti di *Mastodon arvernensis* recentemente scoperti a Spoleto, Pontremoli e Castrocaro. Mem. Ac. Bologn. (4) ix, 10 pp., 2 pls.; also Rend. Ist. Bologn. 1888, pp. 87-89.

Describes and figures molars from the two localities mentioned.

FISHER, O. On the Occurrence of *Elephas meridionalis* at Dewlish, Dorsetshire. Q. J. Geol. Soc. xlv, pp. 818-821.

Describes molars and other remains of Elephants from a high-level valley deposit at Dewlish, which are referred to the above mentioned species. Woodcuts are given of two molars.

LADRIÈRE, —. Découverte d'un Silex Taillé et d'une Défense de Mammoth à Vitry-en-Artois. C.R. cvi, pp. 513 & 514.

Records a Mammoth's tusk found in association with worked flints.

LENNIER, G. Notes sur des Débris d'Elephants Fossiles trouvés dans la Seine-Inferieure. Bull. Soc. Geol. Norm. xi. pp. 26-31, pls. ii-vii (1886). [Omitted from Zool. Rec. xxvii.]

Describes and figures molars and tusks of *Elephas primigenius*, and also molars of other species from the Pleistocene of various localities in the Departments mentioned.

POHLIG, H. Monographie der *Elephas antiquus*, Falc., führenden Travertine Thüringens, ihrer Fauna und Flora. Part i. Nova Acta Ac. L.-C. Nat. cur. liii, pp. 1-259, pl. i-x, and numerous zincographs.

This elaborate memoir gives a full account of the author's previously published views as to the classification and number of species of the Elephants. The first section gives a summary of previous work, and the

geological and geographical distribution of *Elephas antiquus*; while the second section is devoted to the dentition and craniology of that species. A remarkable genealogical table is given on p. 257, in which all existing Ungulates and the Sirenians are derived from a hypothetical, and perhaps Cretaceous, ancestor, for which the name *Prototapirus* is proposed, the *Hydracoides*, *Perissodactyla*, and perhaps the *Dinotheriidae*, being directly derived from this type; while an intermediate form termed *Hydrotapirus* is provisionally suggested for the direct stock of the *Sirenia*, and a second, under the name of *Hyotapirus*, for that of the *Artiodactyla* and *Elephantidae*.

†*Elephas primigenius*: J. A. BROWN, P. Geol. Ass. x, pp. 361–372, records remains associated with flint implements at Southall. See also Geol. Mag. (3) v, pp. 317–319.

†*Elephas americanus*: molar from silicified beds of coral in Florida, recorded by H. T. WOODMAN, Tr. N. York Ac. vi, p. 59.

†*Elephas meridionalis*, var. *trogontherii*: a molar from Seville, in Spain, described by H. POHLIG, SB. Niederrhein. Ges. 1888, p. 19, and SB. Ver. Rheinl. p. 19.

Elephas africanus: a large tusk exhibited by E. G. LODER, P. Z. S. 1888, p. 87.

†*Mastodon bonariensis*, n. sp., F. P. MORENO, Bol. Mus. La Plata, 1888, p. 18, Tertiary, S. America.

II. AMBLYPODA.

COPE, E. D. On the Mechanical Origin of the Teeth of the *Amblypoda*. P. Am. Phil. Soc. xxv, pp. 80–88, woodcuts.

Proposes terms for the different methods by which mastication is accomplished in various groups; and then suggests a theory to account for the type of dental structure occurring in the *Amblypoda*.

III. HYRACOIDEA.

a. HYRACIDÆ.

Dendrohyrax emini [Zool. Rec. xxiv, *Mamm.* p. 39], figured by O. THOMAS, P. Z. S. 1888, p. 15, pl. ii.

Dendrohyrax dorsalis, figured by F. A. JENTINK, Notes Leyd. Mus. x, pl. iv (lettered *stumpffii*).

IV. CONDYLLARTHRA.

b. PERIPTYCHIDÆ.

†*Haploconus corniculatus*, n. sp., E. D. COPE, Tr. Am. Phil. Soc. xvi p. 349, Puerto Eocene, U.S.A.

†*Periptychus brubensis*, n. sp., COPE, *l. c.* p. 354, *ibid.*

c. PHENACODONTIDÆ.

†*Phenacodus europæus*, n. sp., L. RÜTIMEYER, Abh. schw. pal. Ges. xv, p. 38, pl. i, figs. 5-9, Eocene, Switzerland.

†*Protoponia cartieri*, n. sp., RÜTIMEYER, t. c. p. 50, pl. i, fig. 10, *ibid*.

d. MENISCOTHERIIDÆ.

†*Meniscotherium* (*errorim*, *Meniscodon*) sp., RÜTIMEYER, Abh. schw. pal. Ges. xv, p. 50, Eocene, Switzerland.

V. TOXODONTIA.

e. TOXODONTIDÆ.

†*Toxodon antiquus*, n. sp., F. P. MORENO, Bol. Mus. La Plata, 1888, p. 14, Tertiary, S. America.

†*Toxodon giganteus*, n. sp., MORENO, t. c. p. 15, *ibid*.

†*Tacodon rogli*, n. sp., MORENO, t. c. p. 18, *ibid*.

f. TYPOTHERIIDÆ.

†*Pachyrucos elongatus*, n. sp., F. P. MORENO, Bol. Mus. La Plata, 1888, p. 14, Tertiary, S. America.

VI. PERISSODACTYLA.

g. TAPIRIDÆ.

FILHOL, H. Description d'un Nouveau Genre de Mammifère Fossile. Bull. Soc. Philom. (7) xii, pp. 56-58.

†*Palæotapirus dourvillei*, n. g. & sp., H. FILHOL, l. c., Middle Eocene, Buschweiller (Bas-Rhin.). Also Mém. Soc. Géol. (3) v, art. 1, pl. xix, fig. 4.

h. LOPHIODONTIDÆ.

FILHOL, H. Description d'une Nouvelle Espèce de *Lophiodon* (*L. leptorhynchus*). Bull. Soc. Philom. (7) xii, p. 33 & 34.

— Observations concernant la Faune des Mammifères Fossiles d'Argenton (Indre). T. c. pp. 44-48.

Records remains of several Perissodactyles from these deposits, some of which are referred to *Lophiodon*, and others to *Hyracotherium*, *Pachynolophus*, and *Hyrachyus*. The remains referred to the latter genus are identified with some of those described as *Lophiodon minor*, and are regarded as identical with *H. intermedius*, Filhol.

— Etude sur les Vertébrés Fossiles de Issel (Aude). Mém. Soc. Géol. (3) v, art. 1, 188 pp., 21 pls.

The first chapter is devoted to a detailed description of the skeleton of *Lophiodon*. In the second chapter the species of that genus found at

Issel are described, which comprise *L. inselensis*, *L. tapirotherium*, and *L. occitanus*. The third chapter gives an elaborate comparison of all the known forms from other localities with those from Issel, 3 species being new. In the fourth chapter we have descriptions of the species of *Pachynolophus* found at Issel, of which *P. parvulus* is new. In chapter five there is a brief notice of a Creodont Carnivore; while the end of the memoir has a *résumé* of the conclusions derived from the Mammals. The plates illustrate the dentition and osteology of *Lophiodon*, *Pachynolophus*, &c.

†*Hyracotherium cayluci*, n. sp., FILHOL, Bull. Soc. Philom. (7) xii, pp. 16 & 17, Quercy Phosphorites, France.

†*Hyracotherium argentonium*, n. sp., FILHOL, t. c. p. 47, Mid. Eocene, Argenton (Indre).

†*Lophiodon leptorhynchus*, n. sp., FILHOL, t. c. pp. 33 & 34, Low. Eocene, Pépieux (Hérault); Mém. Soc. Géol. (3) v, art. 1, pl. xx, figs. 7-11.

†*Lophiodon munieri*, n. sp., FILHOL, Mém. Soc. Géol. (3) v, art. 1, p. 154, pl. xvi, figs. 1 & 2, Low. Eocene, Soissonais.

†*Lophiodon subpyrenaicus*, n. sp., FILHOL, t. c. p. 158, Eocene, Sibrac.

†*Lophiodon cesserasicus*, n. sp., FILHOL, t. c. pp. 158 & 159, Mid. Eocene, Conques (Aude).

†*Pachynolophus argentonius*, n. sp., FILHOL, Bull. Soc. Philom. (7) xii, p. 47, Mid. Eocene, Argenton (Indre); also Mém. Soc. Géol. (3) v, art. 1, pl. ix, figs. 1, 5.

†*Pachynolophus parvulus*, n. sp., FILHOL, Mém. Soc. Géol. (3) v, art. 1, pp. 170 & 171, pl. xii, figs. 6-9, Mid. Eocene, Issel (Aude)

†*Hyrachyus priscus*. *Protapirus priscus*, of the Quercy Phosphorites, is transferred by FILHOL, Ann. Sci. Géol. xvii, art. 2, to this genus. [Omitted from Zool. Rec. xxii.]

†*Hyrachyus douvillei*, FILHOL, wrongly recorded in Zool. Rec. xxii, Mamm. p. 41, as *Protapirus douvillei*, Miocene, St. Géraud-le-Puy, France.

†*Hyrachyus zeilleri*, n. sp., FILHOL, Ann. Sci. Géol. xvii, art. 2, p. 16, pl. vi (1885), Eocene, Selles-sur-Cher, France. [Omitted from Zool. Rec. xxii.]

†*Hyrachyus intermedius*, n. sp., FILHOL, t. c. p. 16, pl. vi, *ibid.* [Omitted from Zool. Rec. xxii.]

FILHOL, H. Description d'un Nouveau Genre de Mammifère trouvé à Cesseras (Hérault). T. c. pp. 58 & 59.

Describes a mandible which is considered to indicate a form intermediate between *Lophiodon* and *Hyrachyus*.

†*Cesserasicus antiqua*[us], n. g. & sp., H. FILHOL, t. c., Eocene, Cesseras (Hérault). See also Mém. Soc. Géol. (3) v, art. 1, pl. xix, fig. 3.

i. EQUIDE.

D'ORCEY, --. Notes pour servir à l'Histoire du Cheval en Amérique. Bull. Soc. Acclim. (4) v, pp. 877-893, 950-964, 1036-1049, & 1109-1127.

A history of the introduction and development of the Horse in America.

FLOWER, W. H. Article "Zebra." *Encycl. Brit.* 9th Ed. xxiv. p. 772.

A brief account of the 3 species of Zebra, with figures of *E. zebra* and *E. burchelli*.

SMITH, F. Histology of the Skin of the Horse. *J. Anat. Phys.* xxii, pp. 142-153.

This paper is stated to be the first in which the minute structure of the skin of the Horse has been fully worked out.

STEEL, J. H. The nearest Allies of the Horse. *J. Bomb. N. H. Soc.* iii, pp. 82-98.

A description of the family and species of *Equidae*, together with general remarks on their structure, affinities, and habits.

TOURNEUX, F. Sur la Participation des Canaux de Wolff à la Constitution de l'Extremité Inférieure du Vagin chez le Fœtus de Cheval. *C.R. Soc. Biol.* (8) v, pp. 379-381.

Discusses the relations of the Wolffian bodies to the vagina in the fœtus of the Horse.

WEIB, J. J. Equine Mules in Persia. *Zool.* (3) xii, pp. 102 & 103.

Briefly describes several hybrid Equines.

WEITHOFER, A. Ueber ein Vorkommen von Eselsresten in der Hohle "Pytina-jama." *Ann. Hofmuseum Wien*, iii, pp. 7-14, pl. ii.

Describes and figures remains of a species of Wild Ass from a cave near Gabrowitza, Küstenland (Istria).

WILCKENS, M. Beitrag zur Kenntniss des Pferdegebisses, mit Rücksicht auf die fossilen Equiden von Maragha in Persien. *N. Acta. Ac. L.-C. Nat. cur.* lii, pp. 259-284, pls. ix-xv.

Describes the general structure of the teeth in the *Equidae*, and has special observations on the incisors of the Hipparions of Maragha, which are compared to the milk incisors of *Equus*.

Equus caballus: W. HARTWIG, *Zool. Gart.* xxix, pp. 118 & 119, records the occurrence of stripes on the limbs of Norwegian examples.

†*Equus australis*, n. sp., F. P. MORENO, *Bol. Mus. La Plata*, 1888, p. 14, Tertiary, S. America.

†*Equus rectidens*, n. sp., MORENO, *l. c.* p. 18, Tertiary, S. America.

†*Hipparion gracile*: remains from the Pliocene of Greece described and figured by A. WEITHOFER, *Beitr. Pal. Oesterr.-Ung.* vi, p. 245, pls. xiii-xv.

†*Hippodactylus*, n. g., E. D. COPE, *Am. Nat.* xxii, p. 449. Type, *Hipparion antilopinum*, Falc. & Caut., Pliocene, India.

j. RHINOCEROTIDÆ.

BOULE, M. *L'Elasmotherium*. *Le Nat.* 1888, pp. 139-142, pl.

A popular article on the Elasmotherium, with a plate giving a restoration of the animal during life.

GAUDRY, A., & BOULE, M. Matériaux pour l'Histoire des Temps Quaternaires. Fasc. iii—L'*Elasmotherium*. Pp. 83-104, pla. xvi-xix.

Describes and figures a nearly entire skeleton of *Elasmotherium sibiricum* in the Paris Museum [see Zool. Rec. xxiv, *Mamm.* p. 42], and shows that its characters are essentially Rhinocerotid. The dentition of *Rhinoceros antiquitatis* (*tichorhinus*) is figured on pl. xvii, for comparison.

†*Rhinoceros antiquitatis* (*tichorhinus*): dentition figured by A. GAUDRY & M. BOULE (*op. cit.*), pl. xvii.

†*Rhinoceros sansaniensis*: recorded by M. VACEK (*supra*, p. 21) as distinct from *R. schleiermacheri*.

†*Elasmotherium sibiricum*, vide GAUDRY & BOULE, *op. cit.*

k. TITANOTHERIIDÆ (= MENODONTIDÆ).

O. C. MARSH, Rep. Brit. Ass. 1888, pp. 706 & 707, has notes on the skeleton of *Brontops robustus*.

l. CHALICOTHERIIDÆ.

In Am. Nat. xxii, pp. 728 & 729, H. F. OSBORN notices a remarkable discovery by H. FILHOL, showing that the phalangeals on which the supposed Edentate genus *Macrotherium* was founded really belong to *Chalicotherium*. It is concluded that the latter genus must remain in the *Perissodactyla*, among which it must be regarded as an aberrant form allied to the American *Palaoryxops*.

m. MACRAUCHENIIDÆ.

†*Macrauchenia formosa*, n. sp., F. P. MORENO, Bol. Mus. La Plata, 1888, p. 13, Tertiary, S. America.

†*Macrauchenia intermedia*, n. sp., MORENO, *l. c.* p. 14, Tertiary, S. America.

VI. ARTIODACTYLA.

BONNET, R. Ueber die Entwicklung der Allantois und die Bildung des Afteres bei den Wiederkäuern und über die Bedeutung der Primitivrinne und des Primitivstreifs bei den Embryonen der Säugetiere. Anat. Anz. iii, pp. 105-126, woodcuts.

An elaborate paper on the development of the allantois and the formation of the anus in the Ruminants, concluding with a general discussion on the primitive streak and primitive groove in Mammals generally.

BOULART, B. Note sur le Placenta du *Cervus mexicanus*. C.R. Soc. Biol. (8) v, p. 422.

In this paper the author proposes to divide the *Pecora* as follows, viz.:

1. An acotyledonous or diffuse placenta—*Camelidae*, *Tragulidae*.
2. An oligocotyledonous placenta—*Cervidae* (incl. *Moschus*).
3. A polycotyledonous placenta—*Girafidae*, *Bovidae*.

BRANDT, E. Vergleichend-anatomische Untersuchungen über die Griffelbeine (*Ossa calamiformia*) der Wiederkäuer (*Ruminantia*). Zool. Anz. 1888, pp. 542-548.

Describes and figures the gradual obliteration of the metapodials of the Ruminants, as exemplified both in the Tele- and Plesiometacarpalian modifications.

COPE, E. D. The *Artiodactyla*. Am. Nat. xxii, pp. 1079-1095, pls. xxvi-xxviii, woodcuts.

This paper comprises only the first portion of the communication. The suborder is divided into the following families, viz.: *Pantolestidae*, *Anoplotheriidae*, *Dichobunidae*, *Cænotheriidae*, *Anthracotheeriidae*, *Xiphodontidae*, *Suidae*, *Hippopotamidae*, *Merycopotamidæ*, *Dichodontidae*, *Oreodontidae*, *Poebrotheriidae*, *Protolabididae*, *Camelidae*, *Eschatiidae*, *Tragulidae*. *Moschidae*, *Giraffidae*, *Bovidae*, and *Cervidae*. Figures are given of the skull of *Merycochaerus*, *Merychys*, *Pithecistes*, *Cænotherium*, *Cyclopidius*, *Coloreodon*, and *Platygonus*.

FLOWER, W. H. Horns and Antlers. Tr. Middlesex Soc. 1887-88, pp. 21-27, woodcuts.

A popular account of these appendages of the *Ungulata*, with figures illustrating the annual increase in the number of tynes in the antlers of the Red Deer.

HEUDE, P. Études sur les Ruminants de l'Asie Orientale—Cerfs des Philippines et de l'Indo-Chine; et Études sur les Suilliens. Mem. hist. nat. Empire Chinois, vol. ii, pt. i, 64 pp., 21 pls.

This appears to be a continuation of the remarkable memoir quoted in Zool. Rec. xxiv, *Mamm.* p. 46. The first section has descriptions and figures of the skulls and dentition of the *Cervidae* of these regions, which are referred to no less than 54 species (some of which appear to be mentioned for the first time), and are arranged under the generic names of *Usa*, *Sambur*, *Melanaris*, *Sika*, and *Hyelaphus*. The second section is devoted to the dentition of the genus *Sus*, of which genus 11 new species are named from the characters of the premolar teeth figured in pl. xvii, the differences being obviously due either to difference of age or sex or to individual variation. The names are not quoted below.

HUET, A. Liste des Espèces dans les Familles des Cervidées, Cervulidées, Tragulidées, et des Moschidées. Bull. Soc. Acclim. (4) v, pp. 274-284, 497-508, 545-555, & 721-737, woodcuts.

The commencement of a synopsis giving a brief diagnosis of every existing species of Deer, Musks, and Chevrotains.

n. BOVIDÆ.

AULD, R. C. The Wild Cattle of Great Britain. Am. Nat. xxii, pp. 498-509, woodcuts.

A sketch of the general history and of the individual herds of British wild cattle.

1888. [VOL. XXV.]

[AULD, R. C.] The Derivation of the Domestic Polled Cattle. *T. a.* pp. 784-802, woodcuts.

A continuation of the preceding paper, tracing out the relationship of the polled breeds to horned types.

DARESTE, C. Recherches sur les Veaux Natos ou à Tête de Bouledogue. *Bull. Soc. Acclim.* (4) v, pp. 5-11.

Further observations on the subject of the paper quoted in *Zool. Rev.* xxiv, *Mamm.* p. 44.

KALESCHOW, P. Die Schädel-Eigenthümlichkeiten der Rothen Kalmückischen Rinder-Rasse. *Bull. Mosc.* 1888, pp. 385-401; pl. ix.

Figures skulls of Kalmuck Oxen, which are considered to show strongly marked signs of affinity with the Oriental Bibovine group.

MOUSSU, —. Nerf Moteur ou Sécrétaire de la Glande Parotide chez le Boeuf. *C.R. Soc. Biol.* (8) v, pp. 280 & 281.

A preliminary note on the buccal nerve of the Ox, which is split up into a number of branches to supply the parotid and the glands of the molars.

NEHRING, A. Ueber den Schädel eines Franqueiro-Ochsen aus Brasilien. *SB. nat. Fr.* 1888, pp. 91-99, 2 woodcuts.

Describes and figures the skull of a Bovine from San Paulo belonging to the race locally known as Franqueiros, characterized by the peculiar form and large size of the horns. A skull of *Bos primigenius* is figured for comparison.

MULKMUS, B. Ueber die rudimentäre Beuteltasche der Schafe. *Arch. f. Thierheilk.*, 1888, p. 1; see also *MT. Ver. Frankfurt-a-O.* vi, pp. 42 & 43.

Describes a structure in the Sheep which is regarded as a rudimentary Marsupial feature.

PECHUEL-LOESCHE, —. Afrikanische Buffel. *Zool. Jahrb.* iii, Abth. f. Systemat. pp. 704-724, pls. xxvii & xxviii.

Divides the African Buffalos into two groups, viz.: Black Buffalos—*Bubalus caffer*; and Red Buffalos—*Bubalus brachyceros* and *B. pumilus*. It is suggested that there may be another representative of the second group, allied to *B. depressicornis* of Celebes. A map is given illustrative of distribution, and there are also figures of horns.

TOURNEUX, F. Sur les premiers développements du Cloaque du Tubercule génital et de l'Anus chez l'Embryon de Mouton. *J. de l'Anat. Phys.* xxiv, pp. 503-517, pls. xiv-xvi; and *C.R. Soc. Biol.* (8) v, pp. 633-636.

It is concluded that the urethral groove found on the inferior face of the genital tubercle is not a primary structure; also that the cloacal *bourgeon* persists till the embryo attains a length of 32 mm.; and that there is a shifting of the relative position of this *bourgeon* and the rectum as development proceeds.

TROUSSART, E. L. Article "Bœuf." *Le Grande Encyclopédie*, ii, pp. 50-61.

This article is illustrated with figures of many of the existing types of cattle, and gives an account of these and several fossil forms. The phylogeny of the group is discussed, and the author concludes with considerations from an economical point of view.

Bos taurus, var. *primigenius*: the skeleton of a female from the Tertiary of Brandenburg described (with a woodcut of the skull) by A. NEHRING, SB. nat. Fr. 1888, pp. 53-62.

Bos gaurus: a note on its occurrence in Ceylon, given by H. NEVILL, *Taprobanian*, iii, p. 5.

Bison americanus: R. T. HILL, *Science*, xi, p. 240, notes the occurrence of some 200 individuals in various parts of Texas.

† *Helicoceras rotundicorne*, n. g. & sp., A. WEITHOFER, *Beitr. Pal. Oesterr.-Ung.* vi. p. 288, pl. xviii, Pliocene, Greece.

† *Protragelaphus scouzesi*, Dawes: skull from the Pliocene of Greece figured by A. WEITHOFER, *t. c.* p. 285, pl. xvii.

† *Protragoceros chantrei*, Zool. Rec. xxiv, *Mamm.* p. 44. This generic term was a new one in 1887, the Recorder having unfortunately confused it with *Protragelaphus*. *Antilope clavata (sansaniensis)*, of the Miocene of Sansan, is referred to it by the founder of the genus.

Cephalopus doria: 3 specimens and skull figured by F. A. JENTINK, *Notes Leyd. Mus.* x. pls. ii & iii.

† *Antilope gracillima*, n. sp., A. WEITHOFER, *Boll. Comm. Geol.* (2) ix, p. 366, Miocene, Tuscany.

Rupicapra tragus: W. STRICKER, *Zool. Gart.* xxix, pp. 23-26, has a discussion on the phylogeny of the name *Gemse*.

Oribos moschatus: a fossil skull from Germany noticed by H. POHLIG, SB. niederrhein. Ges. 1888, pp. 19 & 20, and SB. Ver. Rheinl. pf. 19 & 20.

NATHUSIUS, W. VON. Ueber die systematische Stellung von *Capra* (?) *pyrenaica*, und die massgebende Bedeutung der Hornwindung. *Zool. Anz.* 1888, pp. 333-338.

Considers that this species must be removed from *Capra*, and should be referred either to a distinct genus or to *Ammotragus*; also discusses the affinity of *Ovis* (*Pseudois*) *nahura*.

REICHENOW, A. Die Wildziege der Insel Jura. *Zool. Jahrb.* iii, Abth. f. Systemat. pp. 591-596, pl. xv.

Describes and figures the Wild Goat of the Island of Joura (Giura), near Eubœa, under the new name of *Capra dorcus*, and discusses its relation to *C. agagrus*.

—. Eine neue Wild Ziege. *Zool. Gart.* xxix, pp. 29 & 30.

A preliminary notice of a specimen of the above species in the Zoological Garden at Berlin.

Capra dorcus, n. sp., A. REICHENOW, *Zool. Jahrb. op. cit.*

o. GIRAFFIDÆ.

†*Urmitherium*, n. g., A. RODLER, Anz. Ak. Wien. 1888, pp. 114 & 115, Low. Pliocene, Maragha, Persia.

†*Samotherium boissieri*, n. g. & sp., C. J. FORSYTH-MAJOR, C.R. cvii, p. 1181, Low. Pliocene, I of Samos.

†*Giraffa* (*Camelopardalis*) *parva*, n. sp., A. WEITHOFER, Beitr. Pal. Oesterr.-Ung. vi, p. 281, pl. xvi, figs. 1 & 2, Pliocene, Greece.

p. CERVIDÆ.

KEILHACK, K. Ueber einen Damhirsch aus dem deutschen Diluvium. JB. k. preuss. geol. Landesanst. 1887, pp. 283-290, pl. xi (1888).

Describes and figures antlers of *Cervus dama* (*Dama vulgaris*), from Pleistocene deposits at Belgig.

J. W. FORTESCUE, Tr. N. Z. Inst. xx, p. 450, has notes on the habits of Deer. For the Deer of China, see HEUDE, p. 49.

R. GILBERT, J. Bomb. N. H. Soc. iii, pp. 224-232, has notes on Sambar and Sambar stalking.

Cervus elaphus: remains from the Duddon Estuary recorded by T. N. POSTLETHWAITE, Zool. (3) xii, pp. 138 & 139.

†*Cervus giganteus* (*megaceros*): a skull found near Bonn, recorded by SCHAUFHAUSEN, SB. niederrhein. Ges. 1888, pp. 4-6. Dimensions of antlers of specimens in several collections given by — POTTER, Field, 1888, June 30, the largest specimen being in the Dublin Museum, and having a span of 11 ft. 7 in.

†*Cariacus* (*Cervus*) *patuchonicus*, n. sp., F. P. MORENO, Bol. Mus. La Plata, 1888, p. 13, Tertiary, S. America.

†*Cariacus minor*, n. sp., MORENO, l. c., Tertiary, S. America.

†*Cariacus intermedius*, n. sp., MORENO, l. c. *ibid.*

†*Cariacus papalquensis*, n. sp., MORENO, t. c. p. 20, *ibid.*

Capreolus caprea: a white race recorded by H. SCHEINPFLUG, Zool. (3) xii, p. 298.

†*Amphitragulus quercyi*, n. sp., H. FILHOL, Bull. Soc. Philom. (7) xii, pp. 12-14, Quercy Phosphorites. Figured by E. L. BOUVIER, Le Nat. 1888, p. 169, fig. 4.

†*Amphitragulus crassus*, n. sp., FILHOL, t. c. pp. 14-16, *ibid.* Figured by BOUVIER, t. c. p. 169, fig. 5.

†*Platy[u]prosopos sansaniensis*, n. g. & sp., FILHOL, t. c. pp. 31 & 32, Mid. Miocene, Sansan (Gers.). Type mandible figured by BOUVIER, t. c. p. 150, fig. 2.

†*Chœlodon elegans*, n. g. & sp., FILHOL, t. c. pp. 17 & 18, Quercy Phosphorites. Figured by BOUVIER, t. c. p. 169, fig. 6.

For the Miocene species of *Talacomeya*, from Styria, see A. HOEMANN, *suprà*, p. 9

q. ANOPLOTHERIIDÆ.

FILHOL, H. Description d'un Nouveau Genre de Pachyderme provenant des dépôts de Phosphate de Chaux du Quercy. Bull. Soc. Philom. (7) xii, pp. 143-147.

Describes a mandible referred to the *Anoplotheriidae*, which is regarded as indicating a new genus named *Uphelognatos* [*? Uphelognathus*, R. L.] *quercyi*.

†*Uphelognatos* [*? Uphelognathus*] *quercyi*, n. g. & sp., H. FILHOL, *op. cit.*, Quercy Phosphorites.

†*Tetracelenodon kowalevskii*, M. SCHLOSSER, Morph. JB. xii, pp. 45 & 134, pl. vi, fig. 5 (1886), Quercy Phosphorites, France. [Omitted from Zool. Rec. xxiii.]

r. ANTHRACOTHERIIDÆ.

NEUMAYR, M. *Hyopotamus*-reste von Eggenburg. Verh. geol. Reichsanst. 1888, pp. 283-285.

Records remains of *Hyopotamus* from the Lower Miocene of Eggenburg, in Lower Austria.

s. SUIDÆ + DICOTYLIDÆ.

For the Swine of China see P. HEUDE, *suprà*, p. 49.

COPE, E. D. On the *Dicotylinae* of the John Day Miocene of North America. P. Am. Phil. Soc. xxv, pp. 62-79.

States that all the species from these beds which have been referred to *Dicotyles* are really distinct, the last premolar being unlike the true molars. Omitting the doubtful genus *Thinohyus*, the American and European Middle Tertiary genera may be arranged as follows:—

Dicotylinae, with simple premolars:

Lower canine received into a deep pit in upper jaw;
canine with triangular section; 3 upper premolars. *Chænohyus*.
Like the last, but 4 upper premolars. *Bothrolabis*.
Canine with oval section, lower one not received into
pit in upper jaw. *Hyotherium*.

5 species are described, 2 of which are referred to a new genus, which is taken to include *Hyotherium americanum*.

DUGÈS, A. *Platygonus alemanii*, nobis, Fossil Cuaternario. Nat. Mex. (2) i, pp. 16-18, pls. i & ii.

Describes and figures the palate, mandible, and limb-bones of a large Peccary from the Pleistocene of Mexico.

NEHRING, A. Die Altersbestimmung des Schwarzwildes, nach dem Gebiss und nach dem Gewicht. Deutsch. Jäger.-Zeit. x, 13 pp., 5 woodcuts.

Gives characters derived from the dentition and the weight by which the age of individuals of the wild *Sus scrofa* can be determined. The figures are the same as in the next paper, in which fuller details are given.

[NEHRING, A.] Ueber die Form der unteren Ecksahne bei den Wildschweinen, sowie über das sog. Torfschwein (*Sus palustris*, Rüttimeyer). SB. nat. Fr. 1888, pp. 11-16, woodcut.

Discusses and figures the contour of the lower canine in various existing *Suids*; and concludes that *Sus palustris* is merely a variety of *S. scrofa*.

——. Ueber die Gebissentwicklung der Schweine, insbesondere über Verfrühungen und Verspätungen derselben, nebst Bemerkungen über die Schädelform frühreifer und spätreifer Schweine. Landw. Jahrb. 1888, 54 pp., 15 woodcuts.

An elaborate account of the development of the dentition of the domestic and wild races of *Sus scrofa*, with figures of the different stages, and tables giving the date of appearance of the individual teeth. It is shown that while there is a great general constancy in the date of the teeth-changes, yet there are races having a tendency either to an acceleration or retardation of this development. Figures are given showing cranial peculiarities in these two races. Observations are also recorded in the skull and dentition of other species of the genus. Reviewed in Biol. Centralbl. viii, pp. 237-240, by W. WILCKENS, and in Zool. Gart. xxix, pp. 190-192.

SANSON, A. Sur l'Origine des Cochons Domestiques. J. de l'Anat. Phys. xxiv, pp. 201-213.

A reply to the conclusions arrived at by Nehring in the papers cited above. It is concluded that the Pigs termed *Sus celticus*, *S. ibericus*, and *S. scrofa* are absolutely specific types; and that while the two first have been domesticated, the third has remained wild. Consequently, domestic swine are not wild swine that have been tamed.

TUCKERMAN, F. Note on the *Papilla foliata* and other Taste Areas of the Pig. Anat. Anz. iii, pp. 69-73.

Describes the structure of the taste-bulbs in the tongue of the Pig.

Sus leucomystax. [See SCHÄFF, *suprà*, p. 19.]

†*Platygonus alemanii*, n. sp., A. DUGÈS, *vide suprà*, Pleistocene, Mexico.

†*Bothrolabis subaqualis*, n. g., E. D. COPE, P. Am. Phil. Soc. xxv, pp. 66 & 67; type, *Palæochærus subaqualis*, Cope, Miocene, U.S.A.

†*Bothrolabis rostratus*, n. sp., COPE, *l. c.* p. 77, *ibid.*

†*Hyotherium æmmerringi*, described and figured by A. HOFMANN (*suprà*, p. 9), from Styria.

7. SIRENIA.

a. HALITHERIIDÆ.

†*Desmotylus hesperus*, n. g. & sp., O. C. MARSH, Am. J. Sci. (3) xxxv, pp. 94-96, woodcut, Tertiary, California.

8. CETACEA.

BOLAW, H. Walthiers. In G. Neumayer's Anleitung zu Wissenschaftlichen Beobachtungen auf Reisen in Einzel-Abhandlungen. Berlin: 8vo, 2 vols, ii, pp. 363-372.

Directions for preserving specimens of Cetaceans, and hints for the

observations which should be recorded, together with notes on their distribution.

CATON, J. D. The Californian Gray Whale (*Rhacheanectes glaucus*, Cope). Am. Nat. xxii, pp. 509-514.

A sketch of the habits of this Whale.

COCKS, A. H. The Finwhale Fishery off the Lapland Coast. Zool. (3) xii, pp. 201-208.

Observations on this fishery, with a record of the number of specimens killed.

FLOWER, W. H. Article, "Whale." Encycl. Brit. 9th ed. xxiv, pp. 523-526; with an appendix on Whale Fisheries, by R. GRAY, pp. 526-528.

This article is illustrated with woodcuts of 5 species of Whales, and after a general introduction as to the systematic position of the order, gives a classified account of the larger forms, together with a briefer notice of some of the smaller *Odontoceti*. The appendix on Whale Fishery describes the vessels and implements employed, and the method of hunting; followed by an account of the fisheries of particular regions.

KEIBEL, F. Die Entwicklungsvorgänge am hinteren Ende des Meer-schweinchenembryos. Arch. Anat. Phys. 1888, Anat. Abth. pp. 407-430, pls. xxiii & xxiv.

A memoir on the development of the hinder extremity of Porpoises, especially noticing the mode of formation of the anus, the development of the allantois and urinary bladder, and of the caudal part of the Wolffian bodies.

KÜKENTHAL, W. Ueber die Hand der Cetaceen. Anat. Anz. iii, pp. 638-646 & 912-916, woodcuts.

Discusses the embryology of the manus of *Globiocephalus*, and concludes therefrom that the theory that its "hyperphalangism" is due to an adaptive segmentation of tissue lying distal of the normal third phalangeal is untenable. Further indicates an analogy between the Cetacean manus and that of the *Ichthyopterygia*.

LEBOUCQ, H. Ueber das Fingerskelett der Pinnipieder und der Cetaceen. Op. cit. iii, pp. 530-534.

Considers that the *Cetacea* are most nearly related to the hypothetical *Promammalia*, and that their "hyperphalangism" is an original and not an acquired character, since the fœtus has more of these bones than the adult.

PROBST, J. Ueber die Ohrenknochen fossiler Cetodonten aus der Molasse von Baltringen, O. A. Laupheim. J.H. Ver. Württ. 1888, pp. 46-63, pls. i & ii.

Describes and figures a number of tympanic and periotic bones of small *Odontoceti* from the Miocene of Baltringen, which are not, however, generically determined.

SOUTHWELL, W. Notes on the Seal and Whale Fishery of 1887. Zool. (3) xii, pp. 121-128.

A summary of the results obtained by the whalers and sealers of 1887.

I. MYSTACOCETI.

a. BALENIDÆ.

BOUVIER, E. L. Les Rorquals des Mers du Nord. Le Nat. 1888, pp. 41-48, woodcuts.

A popular account of the Rorquals of the North Sea, with their parasites.

STRUTHERS, J. Some Points in the Anatomy of a *Megaptera longimana*. J. Anat. Phys. xxii, pp. 109-125, 240-282, 441-460, & 629-656, pls. v, vi, & x-xii, and xxiii, pp. 124-163, pl. vi.

An elaborate memoir (of which the first part was published in 1887) dealing in detail with the anatomy of this Whale. The first part gives a figure of the external form of the entire animal, while the other plates illustrate the anatomy. The second part deals with the limbs. The third part, which is divided into two sections, treats of the vertebral column. The second section of this third part treats of the cervical vertebrae, ribs, sternum, and chevrons, with figures of the atlas and first ribs and sternum. The fourth part is reserved for 1889.

Balænoptera borealis. W. CROUCH, Tr. Ess. Club, ii, pp. 41 & 46, describes and figures an example stranded at Tilbury, Essex, in 1887, and mentions another stranded in the Humber, in 1884. In Rochester Nat. 1888, pp. 361-366, the same writer describes and figures another specimen, stranded in the Medway in 1888, the note on the Tilbury example being partly reproduced. Extracts from the article in Rochester Nat. are given in Zool. (3) xii, pp. 460-468.

Balænoptera rostrata: F. H. BALKWILL, Rep. Plym. Inst. x, pp. 120-122, woodcuts, describes a female caught off the Scilly Isles, and figures its otic bones, together with those of *Grampus griseus*.

II. ODONTOCETI.

b. PHYSETERIDÆ.

CAPELLINI, G. Rostro di *Dioplodon* nelle Sabie Marnose Grigie della Farnesina sotto Monte Mario. Boll. Soc. geol. Ital. vii, pp. 21-22.

Mentions the rostrum of a Ziphoid Cetacean allied to forms from the English Red Crag.

POUCHET, G. Note sur l'Evolution des Dents du Cachalot. C.R. Soc. Biol. (2) v, pp. 503 & 504.

Observations on the dentition of a foetal cachalot, supplemental to those previously made by the author. On pp. 558 & 559 of the same volume the author makes some remarks on photographs of a cachalot.

WALL, W. S. History and Description of the Skeleton of a New Sperm Whale in the Australian Museum, with some Account of a New Genus of Sperm Whales called *Euphysetes*. Sydney: 1887. 8vo. 65 pp., 3 pls.

A reprint by the Australian Museum of a paper published in 1851.

containing a description and figures of the skeletons of *Physetes macrocephalus* (*Cetodon australis*) and *Kogia breviceps* (*Euphysetes grayi*).

Hyperoodon rostratus: M. BAILEY, Naturalist, 1888, p. 114, records the stranding of a living example, at Flamborough, on March 13th; T. SOUTHWELL, Zool. (3) xii, p. 387, mentions two females stranded in Norfolk.

†*Hyperoodon burmeisteri*, n. sp., F. P. MORENO, Bol. Mus. La Plata, 1888, p. 22, S. America.

c. SQUALODONTIDÆ.

DAVIS, J. W. On Fossil-Fish Remains from the Tertiary and Cretaceous Tertiary Formations of New Zealand. Sci. Tr. R. Dublin Soc. (2) iv, pt. i, pp. 1-48, pls. i-vii.

In the course of this memoir the author describes a tooth from the Lower Tertiary referred to a new species of *Squalodon*.

†*Squalodon serratus*, n. sp., J. W. DAVIS, l. c. p. 46, pl. vii, fig. 9, Tertiary, New Zealand.

d. DELPHINIDÆ.

FJELSTRUP, A. Hudens Bygning hos *Globiocephalus melas*. Vid. Medd. 1887, pp. 227-235, pl. viii (1888).

An account of the histology of the skin of the Black Fish. Also given in Zool. Anz. 1888, pp. 11-15, under the title of "Ueber den Bau der Haut bei *Globiocephalus melas*."

LÜTKEN, C. H. Critical Studies upon some *Odontoceti* of the Genera *Tursiops*, *Orca*, and *Lagenorhynchus*. Ann. N. H. (6) ii, pp. 179-186.

A translation of the memoir noticed in Zool. Rec. xxiv, Mamm. p. 50.

VAN BAMBEKE, C. Sur des Follicules rencontrés dans l'Épiderme de la Machoire supérieure chez le *Tursiops tursio*. Bull. Ac. Belg. (3) xv, pp. 505-514, pl.

Describes and figures the follicular glands of the upper jaw of this Dolphin.

Tursiops tursio: a specimen stranded in Kireudbrightshire, recorded by W. JEFFERY, Zool. (3) xii, pp. 346 & 347.

9. EDENTATA.

a. OXYCTEROPODIDÆ.

†*Oxycteropus gaudryi*, n. sp., C. J. FORSYTH-MAJOR, C.R. cvii, p. 1180, Low. Pliocene, I of Samos.

b. MANIDÆ.

†*Palæomanis neas*, n. g. & sp., FORSYTH-MAJOR, C.R. cvii, p. 1180, Low. Pliocene, I of Samos.

c. BRADYPODIDÆ.

LANGKAVEL, B. Aphorism über Faultiere, *Bradypus*. Zool. Gart. xxix, pp. 18-23.

Describes the specimens in the Hamburg Museum, with some general remarks on the group.

d. MEGATHERIIDÆ.

†*Megatherium gaudryi*, n. sp., F. P. MORENO, Bol. Mus. La Plata, 1888, p. 12, Tertiary, S. America.

†*Megatherium filholi*, n. sp., MORENO, t. c. p. 17, *ibid.*

†*Myodon martinii*, n. sp., MORENO, t. c. p. 12, *ibid.*

†*Myodon (Lestodon) garrachicoi*, n. sp., MORENO, t. c. p. 11, *ibid.*

†*Scelidotherium australe*, n. sp., MORENO, t. c. p. 11, *ibid.*

†*Scelidotherium elegans*, n. sp., MORENO, l. c. *ibid.*

†*Scelidotherium possii*, n. sp., MORENO, l. c. *ibid.*

e. GLYPTODONTIDÆ.

KOEN, E. *Eleutherocercus*. Ein Neuer Glyptodont aus Uruguay. Abh. Ak. Berl. 1888, pp. 1-28, pls. i & ii.

Describes and figures part of the terminal tube of the caudal sheath of a large Glyptodont from the Pleistocene of Uruguay, characterized by the presence of large foramina between the scutes, from which it is presumed that bristles grew. Preliminary notice in SB. Ak. Berl. x, p. 309.

†*Glyptodon petaliferus*, n. sp., E. D. COPE, Am. Nat. xxii, pp. 345 & 346, Tertiary, Texas.

†*Eleutherocercus setifer*, n. g. & sp., E. KOEN, t. c., Pleistocene, Uruguay.

†*Prohlophorus australis*, n. sp., F. P. MORENO, Bol. Mus. La Plata, 1888, p. 8, Tertiary, S. America.

†*Hoplophorus formosus*, n. sp., MORENO, l. c., *ibid.*

†*Panocheus trouessarti*, n. sp., MORENO, t. c. p. 9, *ibid.*

†*Dædicurus copei*, n. sp., MORENO, t. c. p. 10, *ibid.*

10. MARSUPIALIA.

LECHE, W. Ueber Mammarorgane und Marsupium bei einigen Beuteltieren, besonders bei *Myrmecobius*. Verh. Biol. Ver. Stockh. i, pp. 34-39, 2 woodcuts.

Considers that the marsupium of the Marsupials corresponds with that of *Echidna*; and that a complete sphincter marsupii is wanting in the male of *Myrmecobius*.

LENDENFELD, R. Bilder aus australischen Urwald. Zool. Gart. xxix, pp. 14-18, 65-68, & 225-231.

In this series of papers on the structure and habits of Australasian Mammals, the first part is devoted to the Monotremes, the second to the Wombats, the third to *Mucropus giganteus*.

OSBORN, H. F. The Structure and Affinities of the Mesozoic *Mammalia*.
J. Ac. Philad. ix, pp. 186-265, pls. viii & ix, 30 woodcuts,

This elaborate memoir, after some introductory matter, commences with a description of the British forms, which is followed by a long section devoted to the classification and zoological relationships of all the known forms; and a third describing the origin and succession of the teeth. The following is the classification adopted:—

A.—First Group.

Subord. MULTITUBERCULATA.

Fam. PLAGIAULACIDÆ.

Microlestes, *Plagiaulax*, *Ctenacodon*, *Ptilodus*, *Neoplagiaulax*,
Meniscoessus, and perhaps *Thylacoleo*.

Fam. BOLODONTIDÆ.

Bolodon, *Allodon*, and perhaps *Chirox*.

Fam. TRITYLODONTIDÆ.

Tritylodon, *Triglyphus*.

Fam. POLYMASTODONTIDÆ.

Polymastodon.

Incertæ Sedis—*Stereognathus*.

B.—Second Group.

Order. PROTODONTA.

Fam. DROMOTHERIIDÆ.

Dromotherium, *Microconodon*.

Subord. PRODELPHIA.

Fam. TRICONODONTIDÆ.

Amphilestes, *Amphitylus*, *Triconodon*, *Priacodon*.

Phascolotherium, *Tinodon*.

Spalacotherium, *Menacodon*.

Fam. AMPHITHERIIDÆ.

Amphitherium, *Dicrocynodon*, *Docodon*, *Enneodon*.

Peramus.

Fam. PERALESTIDÆ.

Peralestes, *Peraspulax*, *Paurodon*.

Fam. KURTODONTIDÆ.

Kurtodon.

Subord. INSECTIVORA PRIMITIVA.

Fam. AMBLOTHERIIDÆ.

Amblotherium, *Achyrodon*.

Fam. STYLACODONTIDÆ.

Stylacodon, *Phascolestes*, *Dryolestes*, *Asthenodon*.

Incertæ Sedis—*Landon*.

The relationship of the *Multituberculata* to the modern *Diprotodontia* is discussed, and also their alleged affinity to the *Monotremata*; and it is considered uncertain whether they are to be regarded as a branch of the Monotreme or of the Marsupial stock. In Group B, the *Triconodontidæ* are regarded as certainly Marsupials, the *Amphitheriidæ* probably, and the *Kurtodontidæ* possibly so, but their characters are considered sufficiently

marked to indicate a distinct suborder. The *Stylacodontidae* (and presumably the *Amblotheriidae*) are provisionally referred to the *Insectivora*. This memoir is reviewed in *Am. Nat.* xxii, pp. 723 & 724; and also in *Nature*, xxxviii, pp. 611-614 [see *Amphitheriidae*].

[OSBORN, H. F.] Additional Observations upon the Structure and Classification of the Mesozoic Mammalia. *P. Ac. Philad.* 1888, pp. 292-301.

This paper is supplemental to the preceding, and makes considerable amendments thereon. The chief amendments are as follows, viz.:—A reconsideration of the dentition of *Amphilestes*, *Amphitylus*, and *Phascolotherium*, in which it is shown that the latter probably had premolars. The identity of *Leptocladus* with *Peramus*; and probably that of *Paralestes* with *Spalacotherium*. It is further considered that *Paraspalax*, *Amblotherium*, *Achyrodon*, *Phascolestes*, *Stylodon*, *Stylacodon*, and *Kurtodon* are closely allied, and represent at most two or three generic types, thus leading to the abolition of the families *Kurtodontidae* and *Amblotheriidae*, and the close identity of forms referred above to the two suborders *Prodidelphia* and *Insectivora Primitiva*. *Amphilestes*, *Phascolotherium*, *Triconodon*, and probably *Amphitylus* have a triconodont, and all the others a tritubercular dentition.

— A review of Mr. Lydekker's Arrangement of the Mesozoic Mammalia. *Am. Nat.* xxii, pp. 232-235.

Criticizes the arrangement adopted in part of the British Museum Catalogue of Fossil Mammals [*Zool. Rec.* xxiv, *Mamm.* p. 10]. Concludes that the *Multituberculata* are not Diprodonta. Points out certain errors and misdeterminations.

RAMSAY, E. P. Notes on the Fauna of the Bellenden-ker Ranges (Queensland). *P. Linn. Soc. N.S.W.* (2) iii, p. 1295-1299.

The first instalment of a paper in which six Marsupials are described, of which two are new. [See *Phalangeridae* and *Dasyuridae*.]

STIRLING, E. C. A New Australian Mammal. *Nature*, xxxviii, pp. 588 & 589. Reprinted in *Zool.* (3) xii, pp. 424 & 425.

Describes a small mole-like Mammal from Australia. It is described as being burrowing, with a marsupium, but no epipubic bones. The teeth are compared to the figures of those of *Amphitherium*.

THOMAS, O. Catalogue of the *Marsupialia* and *Monotremata* in the Collection of the British Museum. London: 8vo, pp. xiv & 402, 28 pls.

"This volume contains the descriptions of 151 species of Marsupials, and 3 of *Monotremata*, in addition to 12 recognizable varieties of the former and 2 of the latter, making a total of 168 definable forms." Two new specific and two new generic terms are proposed, one of the latter being to replace a preoccupied name. Figures of the external form of several species recently described by the author are given, as well as those of the skulls, dentition, muzzles, feet, &c., of numerous types. [See *Phascotomyidae*, *Phalangeridae*, *Macropodidae*, *Peramelidae*, *Dasyuridae*, and *Didelphyidae*.]

ZIETZ, A. Ueber ein Neues Säugethier aus Australien. Zool. Anz. 1888, pp. 647 & 648.

Another notice of the new Australian Mammal recorded by Stirling (*supra*).

I. DIPROTODONTIA.

a. PHASCOLOMYIDÆ.

Phascolomys mitchelli: this name adopted by O. THOMAS, Cat. Marsup. Monotrem. B. M. p. 213, to supersede *P. platyrhinus*.

b. NOTOTHERIIDÆ.

DE VIS, C. W. Note on the Genera *Zygomaturus* and *Nototherium*. P. R. Soc. Queensl. v, pp. 111-116, pl.

Discusses the reference of a humerus by Owen to *Nototherium*, and concludes that this is incorrect. The cranium described by Macleay as *Zygomaturus*, and identified by Owen with *Nototherium*, is regarded as distinct, and it is suggested that the humerus in question may be referable to that form. Figures are given of the premolars of *Nototherium*, and of an allied form termed *Owenia*; while a larger premolar of the upper jaw is figured and referred to *Zygomaturus*.

†*Nototherium dunense*, n. sp., C. W. DE VIS, P. Linn. Soc. N.S.W. (2) ii, pp. 1065-1070, pl. xxxviii, Pleistocene, Queensland. Premolars figured by same, P. R. Soc. Queensl. v, plate facing p. 116.

†*Owenia grata*, n. g. & sp., C. W. DE VIS, P. R. Soc. Queensl. v, plate facing p. 116, Pleistocene, Queensland. [Preoccupied.—R. L.]

c. DIPROTODONTIDÆ.

DE VIS, C. W. On *Diprotodon minor*, Huxley. P. R. Soc. Queensl. v, pp. 38-44.

Considers that the upper premolars figured by Huxley, and referred by Owen to *Nototherium*, certainly belong to *Diprotodon*, and indicate a distinct form which is not the female of *D. australis*.

d. PHALANGERIDÆ.

MILNE-EDWARDS, A. Note sur une Espèce Nouvelle du Genre *Dactylopsila*. Centenaire Mém. Soc. Philom. 1888, pp. 173^o-177^o, pls. xv & xvi.

Describes a species of this genus from South New Guinea, characterized by the extreme elongation of the fourth digit of the manus (*vide infra*).

Phalangista johnstoni, n. sp., E. P. RAMSAY, P. L. Soc. N.S.W. (2) iii, pp. 1297 & 1298, Bellenden-ker Range, Queensland.

Dromicia lepida, n. sp., O. THOMAS, Cat. Marsup. Monotrem. B. M. p. 142, Tasmania.

Phalanger orientalis, n. var. *breviceps*, O. THOMAS, t. c. p. 204, New Britain and Solomon Is.

Dactylopsila palpator, n. sp., A. MILNE-EDWARDS, op. cit., South New Guinea.

Petaurus breviceps, n. var. *papuanus*, THOMAS, t. c. p. 158, Papua.

Petauroides, n. n., THOMAS, t. c. p. 163, to replace *Petaurista*:

Pseudochirus occidentalis, n. sp., THOMAS, t. c. p. 174, Western Australia. *P. forbesi*, figured t. c. pl. i.

OWEN, R. Description of the Skull of an Extinct Carnivorous Mammal of the size of a Leopard (*Thylacopardus australis*, Ow.), from a recently-opened Cave near the 'Wellington Cave' Locality, New South Wales. P. R. Soc. xlv, p. 99.

Only the title given.

c. MACROPODIDÆ.

†*Triclis ocellans*, n. g. & sp., C. W. DE VIS, P. Linn. Soc. N.S.W. (2) iii, p. 8, pl. i, Pleistocene, New South Wales.

Dendrolagus fulvus, n. sp., C. W. DE VIS, "Brisbane Evening Observer," Queensland. Regarded by THOMAS, Cat. Marsup. Monotrem. B. M. p. 96 & 97, as probably a variety of *D. lumholtsi*.

Caloprymnus, n. g., O. THOMAS, t. c. p. 114. Type; *Bettongia tampestris*.

II. POLYPROTODONTIA.

f. DASYURIDÆ.

Dasyurus gracilis, n. sp., E. P. RAMSAY, P. Linn. Soc. N.S.W. (2) iii, pp. 1296 & 1297, Bellenden-ker Range, Queensland.

Sminthopsis, n. n., O. THOMAS, Ann. Mus. Genov. (2) iv, p. 503 (1887), to replace *Podabrus*.

g. PERAMELIDÆ.

Peragale leucura, figured by O. THOMAS, Cat. Marsup. Montrem. B. M. pl. ii.

h. DIDELPHYIDÆ.

OSBORN, H. F. Observations upon the Foetal Membranes of the Opossum. P. Am. Ass. 1887, pp. 261 & 262 [abstract].

Describes a female with young *in utero* shortly before birth. The function of the yolk-sack placenta is inferred to be the transmission of the secretions of the utricular glands to the embryo, by means of the umbilical vessels. The function of the allantois is either respiratory, or for the absorption of the fluid secreted in the uterine cavity by the utricular glands.

Didelphys dimidiata: F. E. BEDDARD, P. Z. S. 1888, pp. 353-355,

describes and figures a sternal gland resembling that of *Myrmecobius* [Zool. Rec. xxiv, *Mamm.* p. 55].

Didelphys (Micoureus) lepida, n. sp., O. THOMAS, Ann. N. H. (6) i, p. 158, Peruvian Amazons. Figured, Cat. Marsup. Monotrem. B. M. pl. iii, fig. 1.

Didelphys (Peramys) scalops, n. sp., THOMAS, l. c., Brazil. Figured, t. c. pl. iii, fig. 2.

Didelphys (Peramys) iheringi, n. sp., THOMAS, op. cit. p. 159, Rio Grande do Sul. Figured, t. c. pl. iv, fig. 2.

Didelphys (Peramys) henseli, n. sp., THOMAS, l. c. *ibid.* Figured, t. c. pl. iv, fig. 1.

i. AMPHITHERIIDÆ.

(Employed in the sense noticed in Zool. Rec. xxiv, *Mamm.* p. 55.)

† *Amphitylus oweni*, n. sp., H. F. OSBORN, J. Ac. Philad. ix, p. 192, Lower Jurassic, England.

† *Dicrocynodon*, n. n., OSBORN, op. cit. p. 263. To replace *Diplocynodon*, Marsh [preoccupied].

INCERTÆ SEDIS.

MULTITUBERCULATA.

A note on this group given by E. D. COPE, Am. Nat. xxii, p. 12, with woodcut, suggesting their affinity with the *Monotremata*. [See also OSBORN, *suprà*, p. 59.]

11. MONOTREMATA.

See O. THOMAS, Catalogue of *Marsupialia* and *Monotremata* in the British Museum (*suprà*, p. 59). In this work one species of each of the three genera, *Ornithorhynchus*, *Echidna*, and *Proechidna* is admitted, the last-named genus being only adopted with hesitation.

SEELEY, H. G. On the Nature and Limits of Reptilian Character in Mammalian Teeth. P. R. Soc. xlv, pp. 129-141.

In the course of this paper the author gives his reasons for regarding the horny oral plates of *Ornithorhynchus* as representing true teeth in course of degeneration.

a. ORNITHORHYNCHIDÆ.

Ornithorhynchus anatinus: a note on the manner of suckling, as observed in very young specimens, is given in Sci. Goss. 1887, p. 68. R. LENDENFELD, *suprà*, p. 58, has notes on its habits.

POULTON, E. B. The True Teeth and the Horny Plates of *Ornithorhynchus*. Q. J. Micr. Sci. xxix, pp. 9-48, pls. ii-iv.

Describes and figures the microscopic structure of the teeth and horny plates, and shows that they are totally distinct. Mivart's hypothesis of the dual origin of Mammals (*suprà*, p. 14) is discussed, and considered untenable; while Seeley's suggestion (*suprà*) that the horny plates are degenerate teeth is likewise disposed of. Cope's suggestion of the Monotrematous affinity of the *Multituberculata* is also noticed.

b. ECHIDNIDÆ.

MORTON, A. Notes on the Egg of the *Echidna setosa*. P. R. Soc. Tasin. 1887, p. 290, pl. xlv.

Describes and figures a broken egg and the contained embryo.

Proechidna bruijnii: skull figured by M. WEBER, Bijdr. Dierk. 1888, pt. v, pl. i; and an allied form described, having four in place of three digits (*vide supra*, p. 22).

INCERTÆ SEDIS.

Tricuspidodon, n. g., V. LEMOINE, C.R. cvi, p. 512, Lower Eocene, Rheims.

SEELEY, H. G. On Parts of the Skeleton of a Mammal from Triassic Rocks of Klipfontein, Fraserberg, S. Africa (*Theriodon phylarchus*). Phil. Tr. 1888, pp. 141-155, pl. xxvi.

Fully describes and figures the pectoral limb on which this genus and species was founded [Zool. Rec. xxiv, *Mamm.* p. 36]. The carpus is considered to have three centralia, with a conjoint scaphoid and lunar. The specimen is regarded as indicating a generalized Mammal, with affinities to several orders, but which cannot be referred to any existing order. It is referred to the group or subclass which Cope terms *Bunotheria*, but not to any of the described orders. It is contrasted with *Tritylodon*, which is described as a Bunotheroid Rodent; while the present specimen is stated to indicate a Bunotherian with affinities to the *Lemuroidea* and *Carnivora*.

A V E S.

BY

A. H. EVANS, M.A., F.Z.S.

DURING the year 1888 the steady increase of morphological investigation, which has characterized ornithology in common with other branches of Zoology for several years past, has at length reached a pitch far higher than any previous attempt had carried it. The magnificent work of FÜRBRINGER, published by the Society *Natura Artis Magistra* of Amsterdam, even if it prove not to make an epoch, at least marks a resting-place whence future enquiries will be carried on with renewed vigour, and must be regarded as unquestionably the most remarkable ornithological work of the past twelvemonth. Such details as our space will allow, and especially the systematic results arising from the author's long-continued labours, are given under his name, and it is greatly to be regretted that the abstract contributed by his friend and fellow-worker to 'Nature' (13th and 20th December, 1888), has not been reproduced in such a form as would have rendered it accessible to all English-reading Ornithologists; but it must be borne in mind that FÜRBRINGER's treatment of the subject is by no means limited to the Class *Aves*, and that very valuable observations on other groups of Vertebrates, having an important bearing on General Morphology, are included in his two massive volumes.

Nor is this the only subject of importance incidental to the year: for of great interest, in a different direction, is the recent invasion of *Syrnhaptes*—more extensive than that of 1863—which has been duly chronicled in a large number of papers to be found under *Pteroclidæ*; but we yet await a full account of the movement from Dr. R. BLASIUS and Professor NEWTON.

Another excellent piece of work must not be omitted in this connection—that of PORTIS on the Fossil Birds of Italy (which, strictly speaking, belongs to a former year); while the Anatomical papers by BEDDARD, GADOW, LUCAS, the two PARKERS, and SHUFELDT—not forgetting FÜRBRINGER as above—are noteworthy.

Of the Catalogue of the Birds in the British Museum, two volumes have appeared, SCLATER treating of the *Oligomyodæ*, and SHARPE of the

Fringillide. E. BARTLETT has commenced a Monograph of the *Ploccide* and *Fringillide*; and MENZBIER is incorporating SEVENZOFF's notes in his 'Ornithologie du Turkestan,' of which the first part has been issued. Lastly, REICHENOW has given us a study of the Geographical Regions from an ornithological point of view, E. P. RAMSAY a Tabular List of Australian Birds, and E. NEWTON a list of those of the Mascarene Islands, including the Seychelles.

The following works have advanced a stage :—GIGLIOLI & MANZELLA (*Iconografia dell' Avifauna Italica*); GODMAN & SALVIN (*Biologia Centrali-Americana*); LORD LILFORD (*Coloured Figures of the Birds of the British Islands*); SHARPE & WYATT (*Monograph of the Family of Swallows*): whereas those of BULLER (*History of the Birds of New Zealand*), SHARPE (*Continuation of Gould's Birds of New Guinea*), and A. NEWTON (*Articles in the Encyclopædia Britannica*) have reached their conclusion.

In the periodical literature of the year CORY issues the final part of his *Birds of the West Indies*; PELZELN & LORENZ that of their *Types of the Ornithological Collection at Vienna*; HARGITT continues his *Notes on Woodpeckers*, and VIAN his *Monograph of the *Psittopodes**, Sundval; while C. W. DE VIS gives us a 'Glimpse of the Post-tertiary Avifauna of Queensland,' in a paper of considerable importance. Oology is represented by the articles of KUTTER, CAMPBELL, and NORTH, with two parts of SUNDMAN's 'Eggs of Finnish Birds.'

The attention of Explorers seems this year to have been fairly evenly divided between the different regions.

The chief works published during the past year, as far as they relate to GEOGRAPHICAL AREAS, &c., may be found under the names below; while reference should also be made to BARTLETT, BEDDARD, BENDIRE, BERLEPSCH, COUES, ELLIOT, FROUDE, HAMONVILLE, HARGITT, HARTING, LATASTE, MAREY, A. NEWTON, NORMAN, W. K. & T. J. PARKER, REICHENOW, RIDGWAY, SALVIN, SCLATER, SEEBOHM, SHARPE, SHARPE & WYATT, SHUFELDT, TEGETMEIER, and DE VIS.

PALEARCTIC REGION: Bianchi (Russia), A. Chapman (Spain), Chernelháza (Hungary), J. Cordeaux (Britain), De-Carlini (Italy), Dörries (Siberia), Giglioli & Manzella (Italy), Guillemard (Cyprus), J. H. Gurney, Jun., Harvie-Brown & Buckley, Irby, Lilford (Britain), Lovassy (Hungary), Mansel-Pleydell (Britain), Menzbier (Turkestan), Meyer & Helm (Germany), Middendorf (Russia), Nikolski (Central Asia), Olphe-Galliard (W. Europe), Picaglia (Italy), Pleske (Turkestan), Reid (Teneriffe), Salvadori (Italy), Sandor (Hungary), Saunders (Britain), Schiavuzzi (Adriatic), Seebohm (Liu-Kiu Ia, Siberia, &c.), Simroth (Azores), Stejneger (Japan), Sundman (Finland), Sundstrom (Sweden), Taczanowski (Poland, Corea), Tristram (N. Pole), Tschusi (Austro-Hungary & Germany), Tschusi & Dalla Torre (Austro-Hungary), Winge (Denmark), Zarudnoi (Russia).

ETHIOPIAN: Eocage (St. Thomas I.), Büttikofer (Liberia, Congo,

S.W. Africa), Giglioli (Assab and Shoa), Hartlaub (Central Africa), Koenig (Tunis), Müller (Congo), E. Newton (Mascarene Is.), Salvadori (Shoa), Shelley (E. and Equat. Africa, *Bucerotidae* of Region), Sousa (St. Thomas I., Angola), Tristram (E. Africa).

INDIAN: Blasius (Palawan), W. W. Cordeaux (Cashmere), Hume (India), Lister (Christmas I., Indian Ocean), Oates (Burma), Sharpe (Palawan, Borneo, Perak), Steere (Philippines), Trutat (China).

AUSTRALIAN: Broadbent (Australia), Buller (New Zealand), Campbell (Australia), Finsch (New Zealand and New Guinea), Gould [Sharpe] (New Guinea), North (Australia), Ogilvie-Grant (Pacific), E. P. Ramsay (Australia), Sharpe (Pacific), Stejneger (Pacific), Woodford (Pacific).

NEARCTIC: Beckham, Bendire, Brewster (U.S.), Chamberlain (Canada), Downes (Nova Scotia), Evermann, Goss, Merrill, Ridgway, W. E. D. Scott (U.S.), Turner (Labrador), Shufeldt (U.S.).

NEOTROPICAL: Berlepsch (S. and Central America), Brewster (Central America), Burmeister (S. America), Cory (West Indies), Godman & Salvin (Central America), Herrera (Mexico), Lawrence (Central America), Philippi (Chili), Ridgway (S. and Central America), Ridley (Fernando Noronha), Salvin (Central America), Sclater & Hudson (Argentine Republic), Withington (Argentine Republic), Zeledon (Costa Rica).

For extinct species see: Portis, De Vis.

For anatomical, morphological, physiological, and pathological papers, including those on flight, see: Allen, Beard, Beddard, Bellonci, Bignon, Bronn [Gadow], Buchet, Casin, Cope & Kingsley, Corin & Beneden, Cornil & Toupet, Coues, Dalla Torre, Fürbringer, Gadow, Gaupp, Gasch, Häcker, Jensen, Liebermann, Lucas, Mackay, Mall, Marcacci, Mazzarelli, Mehnert, Newberry, W. K. & T. J. Parker, Ramón y Cajal, Regalia, Saint-Remy, Sanfelice, Sangalli, Shufeldt, Stamati, Sutton, Trowbridge, Virchow, Walker.

THE GENERAL SUBJECT.

WITH TITLES OF SEPARATE WORKS AND OF THE MORE IMPORTANT PAPERS PUBLISHED IN PROCEEDINGS OF SOCIETIES, &c.

Report on the Migration of Birds in the Spring and Autumn of 1886.

By J. A. HARVIE-BROWN, J. CORDEAUX, R. M. BARRINGTON, A. G. MORE, & W. EAGLE CLARKE. Ninth Report. Edinburgh: 1888, 8vo, 175 pp. [Cf. Zool. Rec. xxiv, *Aves*, p. 3.]

Report of the Committee, consisting of Mr. THISELTON DYER (Secretary), PROFESSOR NEWTON, PROFESSOR FLOWER, Mr. CARRUTHERS, and Mr. SCLATER, appointed for the purpose of reporting on the present state of our knowledge of the Zoology and Botany of the West India Islands, and taking steps to investigate ascertained deficiencies in the Fauna and Flora. Rep. Brit. Ass. 1888, pp. 437-464 [28 pp. sep.]. [See SHARP, D.]

XL. Jahresbericht (1886) des Ausschusses für Beobachtungsstationen der Vögel Deutschlands. J. f. O. 1888, pp. 313-571. [*Cf. Zool. Rec. xxiv, Aves, p. 3.*]

*Japanese Ornithology. Illustrated by a series of 130 hand-coloured engravings of the Birds and Foliage, by native Japanese artists. Tokio : 1887, 2 vols., fol.

The birds are represented flying, sitting, fighting, eating, fishing, diving.

*— A series of 60 hand-coloured original drawings of Japanese Birds, on 12 plates, by native Japanese artists. Tokio : 1887, 4to.

AITKEN, E. H. The Natural History of a Voyage from Liverpool to Bombay. J. Bomb. N. H. Soc. iii, pp. 238-244.

A few notes on Birds are given.

ALBARDA, H. Ornithologie van Nederland waarnemingen in 1886. Tijdschr. Nederl. Dierk. Ver. (2) ii, pp. 10-17.

ALLEN, J. A. Visitors' Guide to the Collection of Birds in the American Museum of Natural History. New York : 1888, 8vo.

— On the Structure of Birds in relation to Flight, with special reference to recent alleged discoveries in the Mechanism of the Wing. Tr. N. York Ac. Sci. vii, pp. 89-100. [*See COUES, E., LUCAS, F. A., NEWBERRY, J. S., TROWBRIDGE, W. P., and cf. Zool. Rec. xxiv, Aves, p. 22, sub nom. NEWBERRY, J. S.*]

— [*See also FAXON, W., Tityra nigriceps, n. sp. (Cotingidæ), Ammodramus maritimus peninsulae, A. m. sennetti, n. subsp. (Fringillidæ), Symphemia (Scolopacidæ).*]

ALTUM, E. Ueber Federkleider und Mauser mancher Vögel. J. f. O. 1888, pp. 109-111.

APLIN, O. V. Ornithological Notes from the Norfolk Coast. Zool. 1888, pp. 131-135.

ARÉVALO, J. [*See Syrrhaptes (Pteroclidæ).*]

ATKINSON, E. D. [*See Demiegretta (Ardeidæ).*]

BACKHOUSE, J. [JUN.] Notes on, and Additions to, the Avifauna of Upper Teesdale. Naturalist, 1888, pp. 7) & 80.

BAILEY, V. Report on some of the Results of a Trip through Parts of Minnesota and Dakota. Ann. Rep. Dep. Agricult. [U.S.] 1887, pp. 426-454.

Chiefly on damage done by "Blackbirds" (*Icteridæ*) to corn crops, as far as Birds are concerned. [*See FISHER, A. K.*]

BALDAMUS, E. [*See HOFFMAN, A.*]

BARNES, H. E. Nesting in Western India. J. Bomb. N. H. Soc. iii, pp. 205-224, pl. [eggs, see *Elanus, Spilornis (Falconidæ)*].

— [*See also Hirundinidæ, Cypselidæ.*]

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the journal or work referred to.

BARRINGTON, R. M. [See *Muscicapa* (*Muscicapidae*), *Puffinus* (*Procellariidae*).]

BARTLETT, E. A Monograph of the Weaver-Birds, *Ploceidae*, and Arboreal and Terrestrial Finches, *Fringillidae*. Pts. i & ii. Maidstone: 1888, sm. 4to, pagin. discontin., 12 pls., for which see the families.

BASEDOW, H. v. Psychologische Bilder aus der Vogelwelt. MT. orn. Ver. Wien, 1888, pp. 4 & 5.

——. Beiträge zur Ornithologie Thüringens. T. c, pp. 65 & 66.

——. [See also *Gallinago* (*Scolopacidae*).]

BEARD, J. Morphological Studies. II.—The Development of the Peripheral Nervous System of Vertebrates. (Part i, *Elasmobranchii* and *Aves*.) Q. J. Micr. Sci. 1888, pp. 153–227, pls. xvi–xxi.

Section ii treats of the chick of the common fowl.

BECHER, E. F. Some Cold-Weather Notes from Guzerat. J. Bomb. N. H. Soc. iii, pp. 114–117.

——. Hot-Weather Notes in the Central Provinces. T. c, pp. 134–137.

Both of these papers treat chiefly of Birds.

BECKHAM, C. W. Birds of South-western Texas. P. U. S. Nat. Mus. 1887, pp. 633–696.

A list of 283 species, with short notes. The writer's researches were made in Bexar, Bee, and Nueces Counties, and he considers the district to be a great meeting-point of eastern and western forms. He compares his list with those of Dresser, Sennett, N. C. Brown, and others.

BECKWITH, W. E. Notes on Shropshire Birds. Tr. Shropshire Soc. xi [1888], pp. 223–238 & 387–402. [Cf. Zool. Rec. xxiv, *Aves*, p. 4.]

BEDDARD, F. E. Notes on the Visceral Anatomy of Birds. No. II.—On the Respiratory Organs in certain Diving Birds. P. Z. S. 1888, pp. 252–258, 2 cuts. [Cf. Zool. Rec. xxii, *Aves*, p. 4.]

On examining *Fratercula arctica*, *Eudypula minor*, *Spheniscus demersus*, and *Rhamphastos ariel*, the author found that the oblique septum was covered for a considerable area with a layer of muscular fibres, a point which had been established by Filhol in the case of *Eudypetes*, and, to a less degree, by Huxley in that of the Duck. Comparing with these facts the structure of the viscera in the Crocodile, he deduces that "the entire fibrous expansion which arises from the vertebral column and extends over the anterior face of the stomach, liver, &c., in the Crocodile represents both the oblique septa and the omentum in the bird," (which are to be derived from it), and that "the oblique septum of Birds has been produced by a vertical fold of this fibrous expansion."

——. [See also *Striges*, *Ardeidae* (anat).]

BELLONCI, J. Ueber die centrale Endigung des Nervus opticus bei den Vertebraten. Z. wiss. Zool. xlvii, pp. 1-46, pls. i-viii, 4 cuts. [Aves, pp. 16-18 (*Passer*, *Parus*, *Gallus*, *Columba*), pl. v, 1 cut.]

BELT, A. Birds of the Ealing District. Rep. Ealing Soc. 1887-88, pp. 12-18.

BENDIRE, C. E. Notes on a Collection of Birds' Nests and Eggs from Southern Arizona Territory. P. U. S. Nat. Mus. 1887, pp. 551-558.

There are several objects of interest, see especially *Psaltiriparus* (*Parida*).

— [See also *Peucaea* (*Fringillida*), *Polioptila* (*Sylviida*), *Sphyrapicus* gen. (*Picida*), *Glaucidium* (*Striges*).]

BENEDEN, A. V. [See CORIN, G.]

BENNETT, K. H. [See *Pachycephala* (*Laniida*).]

BERLEPSCH, H. V. [See *Synallaxis coryi* (*Dendrocolaptida*), *Myrmeciza boucardi* (*Formicariida*), *Myiobius ridgwayi* (*Tyrannida*), *Basileuterus godmani* (*Mniotiltida*), n. spp., *Buarremon simplex*, n. sp., *Eucometis spodocephala pallida*, *E. s. stictothorax*, *E. cristata affinis*, n. subsp. (*Tanagrida*), *Oampylorhynchus sonatus costaricensis* (*Troglodytida*), *Icterus gularis yucatanensis* (*Icterida*), *Certhia mexicana albescens* (*Certhiida*), n. subsp., *Cyclorhis* (*Vireonida*).]

BASTE, W. Ornithologisches aus der Cap-Colonie. Orn. 1888, pp. 667-670.

BIANCHI, V. Biologische Notizen über die im Sommer 1884 bei Uschaki (Gouvernement Nowgorod) beobachteten Vögel. Beitr. Russ. Reiches (3) iv, pp. 189-275.

A useful paper, giving dates not only of capture of specimens, but also of taking of nests, of eggs in various stages, of young in different plumages, &c., with full details. The notes are preceded by a description of the country, and are followed by a table showing each bird's status in the country.

BIGNON, FANNY. Recherches sur les rapports du système pneumatique de la tête des Oiseaux avec le système dépendant de l'appareil pulmonaire. C.R. Soc. Biol. 1888, pp. 357-360.

From the case of the Pelican the authoress draws the following conclusions, laying special stress on the last, while the first seems to be new : 1, That the cervico-cephalic sacs are to be found in that bird ; 2, That the cranial cellules in connection with these sacs are highly developed ; 3, That the pneumatic system communicates with the pulmonary, by means of the vertebral sacs.

— [See also *Psittaci*.]

BLASIUS, W. Die Vögel von Paláwan. Orn. 1888, pp. 301-320.

This paper is based on collections made by Herr and Frau Platen at Puerto-Princessa, and contains 130 species and subspecies, 8 of which are new to science, 6 of them being originally described in the

Braunschweigische Anzeiger of various dates. [See *Syrnium wiepkeni* (*Striges*), *Prioniturus platenæ* (*Psittaci*), *Siphia ramsayi*, *S. platenæ* (*Muscicapidæ*), *Hyloterpe plateni* (*Laniidæ*), *Prionochilus plateni* (*Dicæidæ*), *Turnix haynaldi* (*Turnicidæ*), n. spp., *Carpophaga ænea palawanensis*, n. subsp. (*Columbidæ*).]

[BLASIUS, W.] Die Vögel von Gross-Sanghir (mit besonderer Berücksichtigung der in den Jahren 1886 und 1887 von Herrn. Dr. Platen und dessen Gemahlin bei Manganitu auf Gross-Sanghir angeführten ornitholog. Forschungen) nebst einem Anhang über die Vögel von Siao. T. c. pp. 527-646, pls. iii & iv.

A very full and elaborate paper, containing an account of the position and nature of the islands, of the various explorers and their discoveries, and of the separate species of Birds, the number of which is now raised to 71 for Great Sanghir and is 40 for Siao. Those which are peculiar or especially rare are naturally treated at greatest length, and several new species and subspecies are included, already described in the Braunschweigische Anzeiger. [See *Ninox macroptera* (*Striges*), *Zosterops nehrkorni* (*Meliphagidæ*), pl., *Criniger platenæ* (*Pycnonotidæ*), pl., *Eudynamis mindanensis sanghirensis* (*Cuculidæ*), *Chalcophaps indica sanghirensis* (*Columbidæ*), n. spp. & subsp., *Macropygia* (*Columbidæ*), *Herodias* (*Ardeidæ*).]

BLIGH, S. [See *Hirundo* (*Hirundinidæ*), *Motacilla* (*Motacillidæ*).]

BOCAGE, J. V. BARBOZA DU. [Birds from St. Thomas I., W. Africa, sent by F. Newton (10 species).] J. Sci. Lisb. xlvii [1888], pp. 148-150.

[See *Phæospiza thomensis* (wrongly supposed to be) n. g. & sp. (*Fringillidæ*).]

—. Sur quelques Oiseaux de l'île St. Thomé. Op. cit. xlviii [1888], pp. 211-215.

An account of a fresh collection from F. Newton. 12 species are noticed, including *Cinnyris newtoni* and *Prinia molleri* [cf. Zool. Rec. xxiv, Aves, pp. 5, 50, & 57].

—. [24 species of Birds from St. Thomas I., W. Africa, sent by F. Newton.] T. c. pp. 231 & 232.

[See *Scops scapulatus* (*Striges*), *Amblyospiza concolor* (*Ploceidæ*), n. spp., *Columba arquatrix thomensis* (*Columbidæ*), n. subsp.].

For former papers, cf. Zool. Rec. xxiv, Aves, p. 5.

BONJOUR, S. Note sur quelques variations observées dans le plumage d'oiseaux Européens. Bull. Soc. Z. Fr. 1888 [xiii], pp. 193-199.

20 species are considered.

°BÖRJESSON, G. O. Sällskapet småfoglarnas Vänner. Göteborg : 1888.

BOS, R. Aenderungen in Nestbau der Vögel in baumlosen Gegenden Biol. Centralbl. [1888] viii, p. 320.

BREWSTER, W. Notes on the Birds of Winchendon, Worcester County, Massachusetts. Auk, 1888, pp. 386-393.

A list of species is given, followed by good notes on the breeding, &c., of the rarer kinds.

[BREWSTER, W.] [See *Otophanes mcleodi*, n. g. & sp. (*Cuprimulgidae*), *Ardea bahamensis*, *A. virescens frazari* (*Ardeidae*), *Hamatopus frazari* (*Charadriidae*), *Columba fasciata viosca* (*Columbidae*), *Megascops aspersus*, *M. vinaceus*, *Glaucidium gnoma hoskinsi* (*Strigidae*), *Epididax cineritius*, *Mitrephanes phaeocercus tenuirostris* (*Tyrannidae*), *Icterus wagleri castaneopectus* (*Icteridae*), *Hamophila mcleodi*, *H. cahooni* (*Fringillidae*), *Troglodytes cahooni* (*Troglodytidae*), *Dendroica aestiva sonorana*, n. spp. & subspp.; *Regulus* (*Sylviidae*), *Cistothorus* (*Troglodytidae*).]

BROADBENT, K. The Birds of the Chinchilla District [S. Queensland]. P. R. Soc. Queensl. ii [1885], pp. 117-126.

— The Birds of Charleville. *Op. cit.* iii [1886], pp. 23-31.

— Birds of the Central Part of Queensland. *Op. cit.* v [1888], pp. 14-31.

A list of about 200 species, with short notes.

BRONN, H. G. [See GADOW, H.]

BROOK, G. Note on the Epiblastic Origin of the Segmental Duct in Teleostean Fishes and in Birds. P. R. Soc. Edinb. xiv, pp. 368-370.

BRUSINA, S. Ornitološke bilješke za hrvataku Faunu. Svežanj Prvi. Agram: 1888, 22 pp. [Soc. Hist. Nat. Croatica, iii, pp. 129(-150?).]

Syrhaptes paradoxus, pp. 1-12, *Fratercula arctica*, pp. 12-21, *Alca torda*, pp. 21 & 22.

BRYANT, W. E. Unusual Nesting Sites. I, II. Bull. Cal. Ac. Sci. ii, pp. 451-454, and (series 2), i, pp. 7-10.

— Birds and Eggs from the Farallon Islands. *T. c.* pp. 25-50.

This paper contains good notes on 81 species.

— [See also *Oceanodroma leucor[r]hoa macrodactyla*, n. subsp. (*Procellariidae*), *Coccothraustes* (*Fringillidae*).]

BUCHET, G. Première note sur l'appareil tenseur de la membrane antérieure de l'aile des Oiseaux. C.R. Soc. Biol. 1888, pp. 328-332.

Pt. I. Du tenseur marginal en général. Pt. II. Action du tenseur marginal.

BUCKLEY, T. E. [See HARVIE-BROWN, J. A.]

BULL, H. G. [THE LATE]. Notes on the Birds of Herefordshire. Contributed by members of the Woolhope Club. London & Hereford: 1888, 8vo, xxxi & 274 pp., frontis.

A further addition to our works on the fauna of various counties. An appendix is given on the local names of the Birds.

BULLER, W. L. A History of the Birds of New Zealand. Ed. 2. Pts. III-XIII (concluding the work). London: 1888, 4to, pp. 73-250 (vol. i), pp. 251-359 (vol. ii), title-page, preface, general introduction, & appendix (lxxxiv pp.), pls. ix-1. [Cf. Zool. Rec. xxiv, Aves, p. 7.]

See *Puffinus bulleri*, n. sp., pl. (*Procellariidae*), and for other plates the various families.

[BULLER, W. L.] A Classified List of Mr. S. W. Silver's Collection of New Zealand Birds (at the Manor House, Letcomb Regis), with short descriptive Notes. London: 1888, 8vo, 96 pp.

The Birds are contained in twelve cases, eight of which were exhibited at the Colonial and Indian Exhibition (1886). Figures are repeated of the restoration, skeleton, &c., of the Moa, accompanied by the nests and eggs of various species.

BURCKHARDT, R. Doppelanlage des Primitivstreifens bei einem Hühnerel. Arch. Phys. 1888 [Anat.] pp. 431 & 432, cut.

BUREAU, L. Excursions Ornithologiques en Algérie. C.R. Ass. Fr. Sci. 1888, p. 195.

Arrivals of Birds of passage on their way to the north.

— [See also *Syrnhaptes* (*Pteroclidæ*).]

BURMEISTER, C. V. Relacion de un Viaje à la Gobernacion del Chubut. An. Mus. B. Aires, iii, pp. 175-252, map.

A list of Birds is given, pp. 241-250.

BUTLER, A. W. [See *Ammodramus sandwichensis brunnescens*, n. subsp. (*Fringillidæ*).]

BÜTTIKOFER, J. Zoological Researches in Liberia. A List of Birds, collected by the Author and Mr. F. X. Stampfli during their last sojourn in Liberia. Notes Leyd. Mus. x [1888], pp. 59-106, pl. v (map). [Cf. Zool. Rec. xxii, *Aves*, p. 6, and xxiii, *Aves*, p. 8.]

The Birds which form the subject of this article were collected at Schieffelinsville, on the Junk; at Hilltown, on the Du Queah; and on the Farmington—the two latter being tributaries of the former—as well as along the lower coast of Liberia with its river-mouths. 25 species are added to the explorers' former lists, and Stampfli is still working on the Farmington. [See *Accipiter büttikoferi*, n. sp. (*Falconidæ*), *Cinnyris* sp. ? (*Nectariniidæ*), *Geocichla* (*Turdidæ*), *Nigrita* (*Ploceidæ*), *Megalama* (*Capitonidæ*), *Agelastes* (*Phasianidæ*), *Heliornis* (*Heliornithidæ*).]

— On Birds from the Congo and South-Western Africa. T. c. pp. 209-244, pl. ix.

This paper contains an account of a collection made by P. J. van der Kellen, in 1881-87, on the Lower Congo, the Upper Cunene, the Okovango and Umbella rivers. It is little but a list of 132 species. [See *Neocichla kelleni*, n. sp., *Stiphornis* (*Timeliidæ*), *Plocepas:er rufoscapulatus*, n. sp. (*Ploceidæ*).]

CABANIS, J. [See *Paradisea gulielmi*, *P. augustæ-victoriæ* (*Paradiseidæ*), *Querquedula antarctica* (*Anatidæ*), pl. n. spp.).]

CAMPBELL, A. J. Oology of Australian Birds. Vict. Nat. iv [1888], pp. 182-188. [Supplement, pt. iv.] [Cf. Zool. Rec. xxiv, *Aves*, p. 7.]

The eggs described are those of *Astur novæ-hollandiæ*, *Alcyon diemenensis*, *Cracticus leucopterus*, *Polytelis melanura*, *Platycercus zonarius*, *P. adelaidensis*, *Psephotus multicolor*, *Chalcophaps chrysoclora*, *Erythrau-*

chena humeralis, *Dromæus irroratus*, *Mycteria australis*, *Hypotaenidia brachypus*, *Branta jubata*, *Prion banksi*, *Sterna anglica*, *Gygis candida*. Many of them are said to be new to science.

[CAMPBELL, A. J.] Field Nat. Club of Victoria. Expedition to King Island. Nov. 1887. *Op. cit.* v [1888], pp. 129-164, map. [Birds, pp. 136-138.]

— Notes on Dr. E. P. Ramsay's "List of Australian Birds." *T. c.* pp. 78-85.

Several Birds are recorded, apparently omitted by Ramsay.

ČAPEK, W. Příspěvek ka posnání ptactva moravskeho. (Ein Beitrag zur Kenntniss der mährischen Vogelwelt.) *Casop. mus. olom.* (Zeitschr. d. Olmützer Museumsver.) iv [1887], p. 140.

CARTER, T. Notes from Western Australia. *Zool.* 1888, pp. 28-30 & 191-194.

CAZIN, M. La Structure et le mécanisme du gésier des Oiseaux. *Bull. Soc. Philom.* xii [1883], pp. 19-22.

The inequality in size of the two muscular masses of the gizzard is abnormal and does not affect the motion; while these masses being constantly asymmetrical with regard to their longitudinal axes, a process of crushing and trituration takes place in consequence.

CHAMBERLAIN, M. A Systematic Table of Canadian Birds. *St. Johns, N.B.* : 1888, 4to, 14 pp.

CHAPMAN, A. Winter Notes in Spain. *Ibis*, 1888, pp. 444-461.

An interesting account of ornithological exploration and wildfowling, in continuation of a former paper. [*Cf.* *Zool. Rec.* xxi, *Aves*, p. 9.]

CHAPMAN, F. M. Observations on the Nocturnal Migration of Birds. *Auk*, 1888, pp. 37-39.

An attempt to judge the time and height at which Birds fly, with a table of results. [*Cf.* *Zool. Rec.* xviii, *Aves*, p. 26.]

— A List of Birds observed at Gainesville, Florida. *T. c.* pp. 267-277.

— List of Additions to the North American Avifauna and of Eliminations and Changes in Nomenclature proposed since the Publication of the A. O. U. Check-List. *T. c.* pp. 393-402.

The Recorder finds that all the new species and subspecies here mentioned are inserted in the *Zool. Rec.* in past years, or will be added this year. *Passerina parvilinea indigotica*, n. subsp., and *P. sumichrasti*, n. sp. [*Cf.* *Zool. Rec.* xxiv, *Aves*, p. 46], are, however, omitted.

CHERNEL, J. Adatok honi madaraink népies elnevezéséhez. *Termés. Közlöny*, xx, pp. 303-309.

A very important and useful paper on the popular names of the Birds of Hungary.

CHERNELHÁZA, S. C. v. Seltene Durchzügler und Wintergäste in Ungarn. *MT. orn. Ver. Wien*, 1888, pp. 8 & 9.

— A honi madartan történetéből (Aus der Geschichte der einheimischen Ornithologie). *Köszeg és Vidéke*, vii [1887], Nos. 1 & 2.

[^oCHERNELHÁZA, S. C. v.] Adatok, Vas-, Sopron-, Pozsony- és Fehérmegye madárfaunájához (Beiträge zur Vogelfauna der Eisenburger-, Oedenburger-, Pressburger- und Weissenburger Comitates). Vadáslap. viii [1887], pp. 175-178.

^o —. A honi madártan történetéből. A madártan fejlődése kir. magyar természettudományi társulat megalapításáig. (Aus der Geschichte der einheimischen Ornithologie. Die Entwicklung der Ornithologie bis zur Gründung des kön. ung. naturwissenschaftlichen Vereines). *Op. cit.* xix [1887], pp. 415-418 & 456-460.

CHRISTY, M. Bird's-Nesting and Bird Skinning: a complete description of the Nests and Eggs of Birds which breed in Britain. Second Edition. Revised and re written, with Directions for their Collection and Preservation; and a Chapter on Bird-Skinning, &c. London: 1888, 8vo, 138 pp., cuts.

The first edition was by E. Newman; this is entirely re-written.

CLIFTON, E. W. The Birds of Keiskama Hoek Division of King William's Town, Cape Colony. *Ornis*, 1888, pp. 147-154.

A mere list of 73 species, with a few remarks on popular names and frequency of occurrence.

CLODIUS, G. Mittheilung über eine Sammlung ausgestopfter Vögel. *Arch. Ver. Mecklenb.* xlii [1888], pp. 107-118.

Simply a list, which might be useful to those working at the distribution of Birds in Germany.

COLLETT, R. [See *Larus (Laridae)*.]

COOKE, W. W. Report on Bird Migration in the Mississippi Valley in the years 1884-1885. Washington: 1888, 8vo, 313 pp., map. Edited and Revised by C. H. MERRIAM.

COPE, E. D., & KINGSLEY, J. S. The relative weight of the Brain to the Body in Birds. *Am. Nat.* 1888, pp. 537-539.

CORDEAUX, J. Ornithological Notes from North Lincolnshire. *Zool.* 1888, pp. 59-63.

——. Field Notes from North Lincolnshire in the spring of 1888. *T. c.* pp. 241-247.

——. Heligoland. *Naturalist*, 1888, pp. 1-12.

Almost entirely on Birds.

——. Notes from the Spurn in the spring of 1888. *T. c.* p. 202.

——. [See also *Syrnhaptes (Pteroclide)*.]

CORDEAUX, W. W. Notes on the Birds of Cashmere and the Dras District. *Ibis*, 1888, pp. 218-226.

A very interesting account of a trip, extending from the middle of April to July 8th, during which the writer met with above 60 species of Birds and procured the nests and eggs of many of them.

CORIN, G., & BENEDEN, A. VAN. Recherches sur la régulation de la température chez les Pigeons privés d'hémisphères cérébraux. *Arch. Biol.* pp. 265-276, 2 cuts.

CORNEVIN, C. Essai sur les moyens de connaître l'âge des Oiseaux de basse-cour. J. de l'Anat. Phys. xxiv, pp. 400-412, 2 outs [claws]. [Also Ann. Soc. Agric. Lyon (6) i [1888], pp. 129-143.]

CORNIL, —, & TOUPET, —. Sur une maladie nouvelle des Canards (Choléra des Canards). Bull. Soc. Acclim. 1888, pp. 625-640.

CORY, C. B. The Birds of the West Indies, including the Bahama Islands, the Greater and the Lesser Antilles, excepting the Islands of Tobago and Trinidad. Auk, 1888, pp. 48-82 & 155-159.

The subject is now concluded, and an appendix is added to contain information which has accumulated during the progress of the work. [Cf. Zool. Rec. xxiv, *Aves*, p. 9.]

—. [See also *Elainea barbadensis*, *Myiarchus berlepschi*, n. spp. (Tyrannidæ), *Margarops montanus rufus*, n. subsp. (Turdidæ), *Falco* (Falconidæ).]

COUES, E. Notes on the Nomenclature of the Muscles of Volation in Birds' Wings. Auk, 1888, pp. 435-437.

Suggested by J. A. Allen's paper, "On the Structure," &c. (q.v.).

—. [See also *Alaudidæ*, *Dendroica* (Mniotiltidæ), *Chordeiles popetue chapmani*, n. subsp. (Cuprimulgidæ), *Rhynchoeca* (Scolopacidæ).]

DALLA-TORRE, K. W. v. Untersuchungen über den Mageninhalt verschiedener Vögel. Biol. Centralbl. [1888] viii, pp. 473-480.

On the contents of the stomachs of various Birds.

—. Ornithologisches aus Tirol. MT. orn. Ver. Wien, 1888, pp. 105 & 107. [Cf. Zool. Rec. xxiv, *Aves*, p. 9.]

—. [See also TSCHUSI ZU SCHMIDHOFFEN, V. v.]

DALY, D. D. [See *Collocalia* (Cypselidæ).]

DAVISON, W. Notes on Birds from Travancore and the Anamullai Hills. [A Letter]. Ibis, 1888, pp. 146-148.

DE-CARLINI, A. Vertebrati della Valtellina. Atti Soc. Ital. xxxi, pp. 17-90. [Birds, pp. 35-80.]

This work treats of the districts stretching from the Upper Engadine to Trent and Brescia. The author, who follows Salvadori's "Elenco" in the matters of nomenclature and classification, gives interesting information as to the range of species, their breeding, &c., e.g., *Acerulula*, *Monticola*, *Passer*, *Egiothus*.

DELAURIER, A. [AÎNÉ]. Note sur l'Ortalide Araucan et quelques reproductions d'oiseaux exotiques. Bull. Soc. Acclim. 1888, pp. 1137-1145.

DESTREE, —. Sur la maladie du perroquet gris. Bull. Soc. Belg. Micr. xiv, pp. 159-162.

DE VIS, C. W. A Glimpse of the Post-tertiary Avifauna of Queensland. P. Linn. Soc. N.S.W. iii [1888], pp. 1277-1292, pls. xxxiii-xxxvi.

[See *Dendrocygna ulidipinnis*: *Nyroca robusta*, *N. australis*?, *Anas elapsa* (*Anatidae*), *Porphyrio* ? *reperta*, *Gallinula strenuipes*, *Fulica prior* (*Rallidae*), *Plotus parvus* (*Plotidae*), *Xenorhynchus nanus* (*Ciconiidae*), *Dromaus patricius* (*Casuariidae*), n. spp.; *Otididae*, incert. gen.]

——. [See also *Colluricincla sibilis*, n. sp. (*Laniidae*), *Goura* (*Columbidae*).]

DIXON, C. Our Rarer Birds: being Studies in Ornithology and Oology. London: 1888, 8vo, 373 pp.

DOMBROWSKI, E. v. Beiträge zur Kenntniss der Vogelwelt des Neusiedlersees in Ungarn. MT. orn. Ver. Wien, 1888, pp. 173-175.

DÖRRIES, F. Die Vogelwelt von Ostasibirien. J. f. O. 1888, pp. 58-97. Communicated by T. NOACK.

133 species are mentioned in this important paper, which treats of the Island of Ascold, near Vladivostock, the districts bordering the rivers Sidemi and Suifun, and middle and lower Ussuria. Details of all sorts of field work are given in abundance, as the result of the travels of the writer and his brother. [See *Emberiza* (*Fringillidae*).]

DOWNES, A. Birds of Nova Scotia. P. N.-Scot. Inst. vii, pp. 142-178.

A list of 240 species, with notes on those which are resident.

DRESSER, H. E. [See *Lanius raddii*, n. sp. (*Laniidae*).]

DRUMMOND-HAY, H. M. Additional Notes on the Report of the Ornithology of the East of Scotland, from Fife to Aberdeen inclusive (1885). Scot. Nat. 1888, pp. 345-350.

[See *Syrnhaptes* (*Pteroclidæ*), and cf. Zool. Rec. xxiii, *Aves*, p. 13.]

——. Notes on some Rare Perthshire Birds lately placed in the Museum. Tr. Perthsh. Soc. i, pp. 1-15.

——. [See also *Saxicola* (*Sylviidae*).]

DUCLOS, G. Note sur l'éducation des Perdreaux en vue du repeuplement des chasses. Bull. Soc. Acclim. 1888, pp. 343-346.

DUTCHER, W. Bird Notes from Long Island, N.Y. Auk, 1888, pp. 169-183. [Cf. Zool. Rec. xxiii, *Aves*, p. 13.]

6 species are new to the district, 3 of them to New York State, and 1 perhaps to America. [See *Larus* (*Laridae*).]

ELLIOT, D. G. [See *Agyrtria alleni*, n. sp. (*Trochilidae*), and *Parridae*.]

ELLISON, A. The Autumnal Migration of Birds in Ireland. Zool. 1888, pp. 16-19, cf. p. 67.

EVERMANN, B. W. Birds of Carroll County, Indiana. Auk, 1888, pp. 344-351.

FAXON, W., & ALLEN, J. A. Notes on the Summer Birds of Holder-ness, Bethlehem, and Franconia, N.H. *T. c.* pp. 149-155.

The Alleghanian avifauna meets the Canadian in the district, which constitutes the importance of this (mere) list.

FEILDEN, H. W. [See *Vanellus* (*Charadriidae*), *Pandion* (*Falconidae*), *Sterna*, *Stercorarius* (*Laridae*).]

FELKIN, R. W. [See SCHWEINFURTH, G.]

FINSCH, O. On the Birds of the Snares Islands, New Zealand. *Ibis*. 1888, pp. 307-309.

[See *Sphenæus* (*Timeliidae*), *Myiomoira* (*Sylviidae*).]

—. Samoafahrten. Reisen in Kaiser Wilhelms-Land und Englisch-Neu-Guinea in den Jahren 1884 u. 1885, an bord des deutschen Dampfers "Samoa." Leipzig: 1888, 8vo, 390 pp., 85 illustr., 6 maps. Atlas, in 4to.

Notices of Birds are to be found throughout.

FISHER, A. K. Food of Hawks and Owls. Ann. Rep. Dep. Agricult. [U.S.], 1887, pp. 402-422.

—. Experiments in Poisoning. *T. c.* pp. 422-426.

—. Notes on the Depredations of Blackbirds and Gophers in Northern Iowa and Southern Minnesota, in the Fall of 1887. *T. c.* pp. 454-456.

FISHER, W. H. [See *Loxia* (*Fringillidae*), *Dendragapus* (*Tetraonidae*).]

FITCH, E. A. [See *Ardea* (*Ardeidae*).]

—, & CHRISTY, M. A Visit to an Essex Gullery, with notes on the Birds frequenting the marshes round Tollesbury. *Ess. Nat.* 1888, pp. 193-198.

FITZGERALD, R. D. [JUNR.] [See *Sphecotheres* (*Oriolidae*), *Campophaga* (*Campophagidae*).]

FRENCH, C. Notes on the Zoology of Lake Albacutya District. *Vict. Nat.* v [1888], pp. 35-42.

Several notices of Birds are included.

FROUDE, W. On the Soaring of Birds. *P. R. Soc. Edinb.* 1887-88, pp. 256-258.

The author states there must be an upward current of air, probably produced, in certain cases, by the alternating heights of the rising and falling wave.

FÜRRINGER, M. Untersuchungen zur Morphologie und Systematik der Vögel, zugleich ein Beitrag zur Anatomie der Stütz- und Bewegungsorgane. Amsterdam: 1888, 2 vols., fol., xlix & 1751 pp., 30 pls. (Bijdragen tot de Dierkunde, Afl. xv. 1 & 2). [*Cf.* GADOW, H., *infra*.]

The general character of this important work has been indicated in our opening paragraph. It consists of two parts: the first, which is

Special, contains 837 pages, and is devoted to a minute description of the bones, nerves, and muscles of the Bird's shoulder-girdle—the result of the examination of many hundreds of specimens of all kinds. In the second and more General part, the author remarks that the study of the morphology of *Aves* well repays the labour, not because the Class exhibits any great or fundamental variety, but because in it several organic systems reach a height not elsewhere attained—small groups of Birds often presenting much differentiation of organs, and thereby rendering it possible to judge of the significance of the respective differences. The origin and development of particular structures, the formation of joints, the nature of sesamoid bodies, the connection of muscles with the nervous system, their variability; and the shifting of the limbs along the vertebral column are discussed from a very general point of view; and this last (the retrogression of the limbs) is shewn to have reached its highest degree in Birds, and especially in large Birds. The same consideration applies, as might be expected, to the muscles which move the limbs, and the *Neubildung* (an untranslatable word in this sense) is attempted to be explained. Passing to more particular topics, the author remarks that small Birds show more primitive and simpler conditions of structure than their larger allies. The first Birds were probably smaller than *Archæopteryx*, and the study of the smaller members within given groups promises to throw the most light on their phylogeny. In the second part of the second volume the taxonomic value of the various characters of all the organic systems is criticized, and a selection of 48 of them, not, of course, of equal value, as presented by the 90 families into which the class is divided, is tabulated. The result shews that those offered by the bill, feet, and oil-gland are comparatively worthless, while pterylosis is never to be neglected. Then follows a disquisition on oology, after which osteological characters are considered, especially in regard to the discovery of a unit for measurement, on the existence of which the author's labour seems to throw doubt. The anterior portion of the sternum is shewn to be noteworthy; but more important still is the maxillo-palatal structure, though Huxley's taxonomy based on this [cf. Zool. Rec. iii, pp. 46–49] seems to be artificial, as the numerous exceptions, ascertained by later researches, go to prove. In some cases the hyoid bones afford good characters. The extent of the coraco-scapular angle depends inversely on the development of the humeral muscles, as is shewn in a tabular form. The difficulty of determining the homologies of the constituents of the pelvis is then considered, but with unsatisfactory results, though the subject is evidently one of promise. Here there is no space for more than allusion to the chapters treating of Palæontology and Geographical Distribution; but a peculiarly important feature of this work is to be found in the two plates giving lateral views of the supposed ancestral tree of the Class, and three others representing as many sections through this ideal tree at different epochs. The Classification adopted as the result of all this unparalleled labour is shewn in the following scheme, reduced to the minimum of detail; and cannot but compare favourably with other plans that it has been the duty of the Recorder of *Aves* to set forth from time to time:—

I. Sub-classis SAURURÆ. Ordo ARCHORNITHES.

Sub-orde *Archæopterygiformes*. Gens *Archæopteryges*.

II. Sub-classis ORNITHURÆ.

Ordo.	Sub-orde.	Gens.
STRUTHIORNITHES.	<i>Struthioniformes</i> .	<i>Struthiones</i> .
RHEORNITHES.	<i>Rheiformes</i> .	<i>Rheæ</i> .
HIPPALECTRYORNITHES.	<i>Casuariiformes</i> .	<i>Casuarii</i> = <i>Dromæus</i> + <i>Casuarius</i> + <i>Dromornis</i> .
Intermed. S.-O.	<i>Æpyornithiformes</i> .	<i>Æpyornithes</i> .
Intermed. S.-O.	<i>Palamedeiformes</i> .	<i>Palamedææ</i> .
PELAGORNITHES.	<i>Anseriformes</i> .	<i>Gastornithes</i> , <i>Anseres</i> s. <i>Lamellirostres</i> .
	<i>Podicipitiformes</i> .	<i>Enaliornithes</i> , <i>Hesperornithes</i> , <i>Colymbo-Podicipites</i> .
	<i>Ciconiiformes</i> .	<i>Phœnicopteri</i> , <i>Pelagohærodii</i> , <i>Accipitres</i> , <i>Steganopodes</i> .
Intermed. S.-O.	<i>Procellariiformes</i> .	<i>Procellariæ</i> s. <i>Tubinares</i> .
Intermed. S.-O.	<i>Aptenodytiformes</i> .	<i>Aptenodytes</i> s. <i>Impennes</i> .
Intermed. S.-O.	<i>Ichthyornithiformes</i> .	<i>Ichthyornithes</i> .
CHARADRIORNITHES.	<i>Charadriiformes</i> .	<i>Laro-Limicolæ</i> , <i>Purra</i> , <i>Oides</i> , <i>Eurypyga</i> , incl. <i>Rhinocetus</i> , <i>Aptornis</i> : <i>Grues</i> = <i>Gras</i> + <i>Psophia</i> + <i>Cariama</i> .
Intermed. S.-O.	<i>Gruiformes</i> .	<i>Fulicariæ</i> = <i>Helionis</i> + <i>Rallidæ</i> : <i>Hemipodii</i> = <i>Mesites</i> + <i>Hemipodiidæ</i> .
Intermed. S.-O.	<i>Ralliformes</i> .	<i>Apteryges</i> = <i>Apteryx</i> + <i>Dinornis</i> .
ALECTORORNITHES.	<i>Apterygiformes</i> .	
	<i>Crypturiformes</i> .	<i>Crypturi</i> .
	<i>Galliformes</i> .	<i>Galli</i> = <i>Gallidæ</i> + <i>Opisthocomidæ</i> .
Intermed. S.-O.	<i>Columbiformes</i> .	<i>Pterocletes</i> . <i>Columbæ</i> .
Intermed. S.-O.	<i>Psittaciformes</i> .	<i>Psittaci</i> .
CORACORNITHES.	<i>Coccygiformes</i> .	<i>Coccyges</i> = <i>Musophagidæ</i> + <i>Cuculidæ</i> .
		Intermed. Gens <i>Galbulæ</i> , incl. <i>Bucconidæ</i> .
	<i>Pico-Passeriformes</i> .	<i>Pico-Passeræ</i> } <i>Pici</i> . <i>Macrochires</i> . } <i>Passercæ</i> . <i>Colii</i> .
	Intermed. Gens <i>Trogones</i> .	
	<i>Halcyoniformes</i> .	<i>Halcyones</i> , <i>Bucerotes</i> incl. <i>Upupa-Meropes</i> .
	Intermed. Gens <i>Toli</i> .	
	<i>Coraciiformes</i> .	<i>Coraciæ</i> , <i>Caprimulgi</i> , <i>Strigæ</i> .

GADEAU DE KERVILLE, H. De la Coloration asymétrique des yeux chez certains Pigeons métis. Bull. Soc. Rouen, 1888, pp. 261-264.

The writer's object is to show that the difference of pigmentation in the eyes is often due to cross-breeding.

[GADEAU DE KERVILLE, H.] [See also *Striges*.]

GADOW, H. The Morphology of Birds. *Nature*, xxxix, Nos. 998 & 999, pp. 150-152 & 177-181 [13 and 20 Dec., 1888].

An admirable extract of FÜRBRINGER's great work (*suprà*, p. 14), concisely setting forth its author's researches and their results, to which we have been greatly indebted for the brief notice already given of it. So far as we are aware, it is the only attempt yet made to make known more generally the enormous extent and the particular bearing of his laborious investigations. Its republication in a more accessible form is a thing greatly to be desired.

— Remarks [1] on the Numbers and [2] on the Phylogenetic Development of the Remiges of Birds. *P. Z. S.* 1888, pp. 655-667.

Part I. contains a comprehensive examination of the number and size of the primaries, with tables of the results, which are given separately for Wallace's groups (A, B, C, D) of *Passeres*. The author finds evidence of the gradual reduction in number of the functional quills, but considers it of little value for classification. In Part II he discusses Wray's discovery that one or two rows of greater under wing-coverts were originally situated on the dorsal side of the wing, and its application to the cases of the *Ratitæ* and *Spheniscidæ*; he also refers to Fürbringer's explanations of the number of scale-like feathers on the wing in the latter family, though disagreeing with that writer's views; and, finally, states his own ideas on phylogenetic development, which lead to the conclusion that Fürbringer is right in considering the *Ratitæ* to be descendants of Birds with the power of flight, and that, on anatomical grounds, the *Spheniscidæ* should not be separated from the *Carinatæ*.

— [BRONN, H. G.]. Klassen und Ordnungen des Thierreichs, wissenschaftlich dargestellt in Wort und Bild. Fortgesetzt von Dr. HANS GADOW in Cambridge. Sechster Band, iv. Abtheilung. Vögel: *Aves* (Gehirnnerven [contd.], Der Kopftheil des sympathischen Nervensystems, Rückenmarksnerven, Das Sehorgan oder Auge, Das Geruchsorgan, Das Gehörorgan, Diffuse Sinnesorgane, Integument oder System der äusseren Haut. 18, 19, 20, 21, 22 Lieferung, pp. 367, 368, & 385-512, pls. xli-xlvi [Structur des Gehirns; Gehirn; Kopf- und Rückenmarksnerven; Schulternerven-Geflecht; Das Auge; Nase, Ohr und diffuse Sinnesorgane], 6 cuts.

GACPP, E. Anatomische Untersuchungen über die Nervenversorgung der Mund- und Nasenhöhlendrüsen der Wirbelthiere. *Morph. JB.* xiv, pp. 436-489, pl. xix. [Birds, pp. 471-481.]

GASCH, F. R. Beiträge zur Vergleichenden Anatomie des Herzens der Vögel und Reptilien. *Arch. f. Nat.* 1888, pp. 119-152, pls. xi & xii.

The author treats of the heart in the cases of *Natatores*, *Grallatores*, *Gallinacæ*, *Columbinæ*, *Scansores*, *Passeres*, *Raptatores*, *Cursores*; pl. xi refers to *Cygnus musicus* and *Ciconia alba*.

GERRARD, J. The Birds of the Stonyhurst District. [Reprinted from the "Stonyhurst Magazine," July, 1888.]

A useful local list, with map of neighbourhood (10 miles radius).

GIGLIOLI, E. H. Note intorno agli Animali Vertebrati raccolti dal Conte Augusto Boutourline e dal Dr. Leopoldo Traversi ad Assab e nello Scioa negli anni 1884-1887. *Ann. Mus. Genov.* xxvi, pp. 5-73.

This paper, of which the Birds occupy pp. 27-65, records a few species observed in Assab by both collectors, as above, and many by Traversi alone, in Shoa. The total number is about 119; an addition of 22 to Salvadori's list [*cf.* *Zool. Rec.* xxi, *Aves*, p. 28], of which 5 are new to Shoa. *Poliospiza isabellina* and *Bradyornis traversi*, at first supposed to be new, = *P. tristriata* and *Lioptilus chocolatinus* respectively.

— & MANZELLA, A. Iconografia dell' Avifauna Italica, ovvero tavole illustrati le specie di uccelli che trovansi in Italia con brevi descrizioni e note. Prato (Toscana): 1888, pts. xxxviii-xliii, pagin. discont. [*Cf.* *Zool. Rec.* xxiv, *Aves*, p. 12.]

The species figured are *Coccyzus erythrophthalmus*, *C. americanus*, *Calamodius schœnobœnus*, *Cisticola cursitans*, *Loxia curvirostra* (pt. xxxviii), *Cerchneis naumanni*, *Coccyzus glandarius*, *Turdus swainsoni*, *Dromolœa leucopyga*, *Emberiza leucocephala* (pt. xxxix); *Cerchneis vespertinus*, *Glaucidium passerinum*, *Pœcile borealis*, *Turdus pallasi*, *Loxia pityopsittacus* (pt. xl); *Circus swainsoni*, *Acridula rosea*, *A. caudata*, *Pœcile lugubris*, *Fringilla montifringilla* (pt. xli); *Cypselus melba*, *C. pallidus*, *Chelidon cashmiriensis*, *Cotile rupestris*, *C. obsoleta* (pt. xlii); *Æsalon regulus*, *Circus cyaneus*, *C. cineraceus*, *Calcarius nivalis*, *Montifringilla nivalis* (pt. xliii).

GODMAN, F. D., & SALVIN, O. *Biologia Centrali-Americana*; or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. London: 1888, 4to, Zoology, pt. lxxii; *Aves*, vol. ii, pp. 1-40, pl. xxxvi. [*Cf.* *Zool. Rec.* xxiv, *Aves*, p. 12.]

This part contains the families *Oxyrhamphidæ*—genus *Oxyrhamphus*; *Tyrannidæ*—genera *Copurus*, *Platyrhynchus*, *Rhynchocyclus*, *Todirostrum*, *Oncostoma*, *Lophotriccus*, *Orchilus*, *Colopterus*, *Leptotriccus*, *Pogonotriccus*, *Serphophaga*, *Mionectes*, *Leptopogon*, *Myiopagis* [n. g., q.v.], *Capsiempis*, *Ornithion*, *Tyrannulus*, *Tyranniscus*, *Elainea*, *Sublegatus*, *Legatus*, *Myiozetetes*. Figures are given of *Tyrannulus semiflavus*, *Leptotriccus superciliaris*, *Elainea arenarum*. [For remarks on the *Tyrannidæ*, see the family.]

GODRY, É. Élevages de 1887 à la Faisanderie de Galmanche (près Caen). *Bull. Soc. Acclim.* 1888, pp. 49-57.

GOERING, A. Ein Ausflug auf dem Paraná. *Monat. Schutze Vogelw.* 1888, pp. 228-231 & 290-293, pl. iv.

GORMLEY, M. H. [See *Cypseloides* (*Cypselidæ*).]

Goss, N. S. Additions to the Catalogue of Kansas Birds. *Tr. Kansas Ac.* x, pp. 28-31 & 77-80.

[Goss, N. S.] New and Rare Birds found breeding on the San Pedro Martir Isle [Gulf of California]. Auk, 1888, pp. 240-244.

[See *Sula gossi*, *S. brewsteri*, n. spp. (*Sulidæ*).]

—. [See also *Pelecanus* (*Pelecanidæ*), *Gymnostinops* (*Icteridæ*).]

GOULD, J. [THE LATE]. The Birds of New Guinea and the adjacent Papuan Islands, including any new species that may be discovered in Australia. Pts. xxiv & xxv (concluding the work). London: 1888, fol., with title-pages, preface, introduction, table of contents, &c. [Cf. Zool. Rec. xxiv, *Aves*, p. 13.]

The letterpress is by R. B. SHARPE. The species figured are *Lophorhina minor*, *Podargus ocellatus*, *Tanysiptera microrhyncha*, *Charmosyna stellæ*, *Lorius flavo-palliatu*s, *Microdynamis parva*, *Lycocorax obiensis*, *Ephthianura crocea*, *Donacicola hunsteini*, *Melidectes emilii*, *Geocichla schistacea*, *Gymnocercz plumbeiventris*, *Ælurædus melanocephalus* (pt. xxiv); *Harpyopsis novæ-guineæ*, *Baza gurneyi*, *Lorius tibialis*, *Nesocentor milo*, *Ihectes aruensis*, *Ianthænas albicularis*, *Carpophaga subflavescens*, *C. van-woyckii*, *Piezorhynchus azillaris*, *P. medius* (pt. xxv).

GREENE, W. T. Parrots in Captivity. Vol. iv. Pts. 29 & 30. London: 1888, 8vo. [Cf. Zool. Rec. xxiv, *Aves*, p. 13.]

GRIEVE, S. [See *Alca* (*Alcidæ*).]

GRUNDTVIG, F. L. Meddelelser om Fuglene ved Shiocton i Bovina Outagamie Co., Wisconsin. 1881-83. Vid. Medd. 1887, pp. 305-396, map.

On the occurrence, times of arrival, &c., of 183 species.

GUILLEMARD, F. H. H. Ornithological Notes of a Tour in Cyprus in 1887. With a Preface by Lord Lilford. Ibis, 1888, pp. 94-124, pl. ii.

The writer visited most parts of the island, of which he gives a good description. The chief novelty obtained was the *Purus cypriotes* [cf. Zool. Rec. xxiv, *Aves*, p. 51]; of this a figure is given.

GUNN, T. E. Ornithological Notes from Norfolk and Suffolk. Zool. 1888, pp. 281-289.

GURNEY, J. H. [See BLIGH, S.; *Scops* (*Striges*), *Polioaëtus* (*Falconidæ*).]

GURNEY, J. H. [JUN.]. On the occasional Assumption of the Male Plumage by Female Birds. Ibis, 1888, pp. 226-230.

A summary of our knowledge of the subject.

—. Notes on the Isles of Scilly and the Manx Shearwaters (*Puffinus anglorum*). Tr. Norw. Soc. iv, pp. 447-454, cut.

—. Ornithological Notes from Norfolk. Zool. 1888, pp. 81-86.

[See *Serinus* (*Fringillidæ*).]

—. Ornithological Notes from St. Leonards. T. c. pp. 332 & 333.

GYNGELL, W. [See *Anser* (*Anatidæ*).]

- HÄCKER, V. Untersuchungen über die Zeichnung der Vogelfedern. Zool. Jahrb. iii, pp. 309-316, pl. viii. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 21.]
- HAMILTON, A. A List of the Native Birds of the Petane District, Hawke's Bay, with Notes and Observations. Tr. N. Z. Inst. 1885 [xviii], pp. 123-128.
- HAMONVILLE, D' [BARON]. [See *Alca* (*Alcidae*), pl.]
- HANF, B. Vogelleben auf dem Furtteiche und in seiner Umgebung in Jahre 1887. MT. Ver. Steierm. 1887, pp. 101-116. [*Cf.* Zool. Rec. xxiv, *Aves*, p. 14.]
- HARDY, F. P. [See *Alca* (*Alcidae*).]
- HARGITT, E. [See *Picidae*.]
- HARTING, J. E. Wild-Fowl Decoys in Essex. Ess. Nat. 1888, pp. 159-169, 3 cuts, map.
- . [See also *Columbidae*, *Syrnhaptes* (*Pteroclidæ*) *Rhynchotus* (*Tinamidae*).]
- HARTLAUB, G. Aus den Ornithologischen Tagebüchern Dr. Emin Pascha's. J. f. O. 1888, pp. 1-4.
[See *Amblyospiza* (*Ploceidae*), and *cf.* Zool. Rec. xxiv, *Aves*, p. 52.]
- *——. Vögel. Aus Neumayer's Anleit. z. wiss. Beobachtung. auf Reisen. 2 Aufl. Berlin: 1888.
- . [See also SCHWEINFURTH, G.]
- HARVIE-BROWN, J. A., & BUCKLEY, T. E. A Vertebrate Fauna of the Outer Hebrides. Edinburgh: 1888, 8vo, xciii & 279 pp., frontisp., 6 pls. (1 cold.), 6 maps (1 cold.), 4 cuts.
- This book is uniform with the fauna of Sutherland, &c., published in 1887 [*cf.* Zool. Rec. xxiv, *Aves*, p. 15], and continues the series relating to Scotch districts. Pp. 14-169 treat of Birds, and give interesting accounts of the various species and their breeding. Six appendices complete the work.
- HELM, F. [See MEYER, A. B.]
- HERRERA, A. L. Apuntes de Ornitología. La Migración en el Valle de México. Nat. Mex. (2) i, pp. 165-189.
- The second part is a list of the Birds of the above district, entitled "Apuntes para el Catálogo de las Aves inmigrantes y sedentarias del Valle de México," pp. 174-189. About 207 spp.
- HODEK, E. Aus Niederösterreich. Zwischen der Ybbs und Donau. MT. orn. Ver. Wien, 1888, pp. 82-84 & 96-100.
- HOFFMAN, A., & BALDAMUS, E. [List of Coburg Birds.] Erste Bericht Thier u. Pflanzenschutz-Vereins Coburg, 1888, Appendix.
- HOMER, A. v. Ornithologische Studien und Mittheilungen aus dem Jahre 1886. Zeitschr. f. Orn. u. prak. Gefl. zu Stettin xi [1887] pp. 133-136 & 149-153. [See also *Syrnhaptes* (*Pteroclidæ*).]

HOPKINS, C. L. [See *Cathartes (Cathartidae)*.]

HUBBARD, ROSE. Ornamental Waterfowl: a practical Manual on the acclimatization of the Swimming Birds, with description of a hundred and thirty species. London & Walsall: 1888, 16mo, ix & 209 pp.

HURDSON, W. H. [See SCLATER, P. L.]

HUME, A. O. The Birds of Manipur, Assam, Sylhet, and Cachar. Str. Feath. xi, pp. i-v & 1-353.

When this paper was begun, in 1881, the first of these states formed the eastern boundary of our Asian Empire. The author wished, therefore, to compare its avifauna with that of the extreme western point—Sindh—which he had already worked out. The species found in Manipur only are distinguished by different type, but reference is also made to those occurring in British Burma, as well as in the other provinces mentioned in the title. Notes are added by J. R. CRIPPS, who was employed as a collector in the district.

HUNT, H. W. The Coloration of Birds' Eggs. Vict. Nat. iv [1888], pp. 189-195.

HURST, E. [See *Cucumantis (Cuculidae)*.]

IRBY, L. H. British Birds: Key List. London: 1888, 8vo, 58 pp.

This useful work contains a concise description of each species which may fairly be considered British, though several American land-birds are omitted. The nomenclature and arrangement of the B. O. U. List has been followed in the main, while the status of each Bird is indicated by letters in brackets.

ISTVÁNTOL, C. Madártani megfigyelések Pozsony vidékén 1885-ben. Verh. Ver. Presburg, 1884-86, pp. 41-66.

Apparently identical with the part of the "Jahresbericht des Comité für Beob. in Oest.-Ungarn" referring to Presburg.

JACKSON, F. J. [See SHELLEY, G. E.]

JEFFRIES, J. A. Note on the Epidermal System of Birds. P. Bost. Soc. xxiii, pp. 358-360.

An answer to E. G. Gardiner (Arch. mikr. Anat. xxiv, p. 289).

— [See also *Trochilus violajugulum*, n. sp. (*Trochilidae*).]

JENNINGS, A. H. List of Birds observed at New Providence, Bahama Islands, March-June, 1887. J. Hopk. Univ. Circ. vii, 63, p. 39.

JENSEN, O. S. Undersøgelser over Sædlegemerne hos Pattedyr, Fugle og Amphibier. Forh. Selsk. Chr. 1887, No. 11, 59 pp., 3 pls.

On the spermatozoa of Mammals, Birds, and Amphibians.

JOUY, P. L. [See *Phalacrocorax (Phalacrocoracidae)*.]

KADICH, H. v. Corrections of Errors in "Hundert Tage im Hinterlande." [Cf. Zool. Rec. xxiv, *Aves*, p. 16.] MT. orn. Ver. Wien, 1888, pp. 18 & 19.

° —. Wald-Fahrten, Wild-Wald- und Waidmannsbilder aus Oesterreichs Bergen. Neudamm: 1888, 8vo, 123 pp.

Apparently contains notes on Birds.

- *KALBERMETTEN, L. Sumpfflehen in Ungarn, Bosnien, und Slavonien. N. Illustr. (Wiener) Zeit. xv [1887], pp. 356-357, pl.
- KARLSBERGER, R. O. Vulgärnamen der Vögel Oberösterreichs. MT. orn. Ver. Wien, 1888, pp. 27 & 28, 54, 66 & 67.
- *KASPAR, P. R. K. Ornithologie moravské (Zur Ornithologie Mährens). Casop. Mus. Olom. (Zeitschr. d. Olmützer Mus.-Ver.) iv [1887], p. 89.
- KELLER, F. O. Der Zug der Vögel. JB. Mus. Kärnt. xix [1888], pp. 121-138.
- KEMPEN, C. VAN. Sur une Série de Mammifères et d'Oiseaux d'Europe présentant des anomalies ou des variétés de coloration. Bull. Soc. Z. Fr. 1888 [xiii], pp. 103-108.
62 species of Birds are noticed.
- KINGSLEY, J. S. [See COPE, E. D.]
- KIRK, T. W. Notes on the Birds of New Zealand. Ibis, 1888, pp. 42-46.
The bird here recorded as *Lobivanellus personatus* should be *L. lobatus*; cf. t. c. p. 283.
- KNAUER, F. K. Ornithologische Mittheilungen aus dem Wiener Vivarium. MT. orn. Ver. Wien, 1888, pp. 129-132, 145 & 146, 160 & 161, 176 & 177.
- KNAUTH, K. Die Vögel des Zobten. J. f. O. 1888, pp. 9-33.
A list of 114 species from the hill-country of central Silesia, which contains nothing of great importance. [See *Buteo* (*Falconidae*).]
- KOCH, A. Eine westliche Tour dem Pelikan (*Pelecanus erythrorhynchus*) zu lieb. MT. orn. Ver. Wien, 1888, pp. 93-96.
A trip for general ornithological purposes, and for a sight of the [American] Pelican in especial.
- . Zwei Monate in West Florida. T. c. pp. 1-4, 25 & 26.
- KOENIG, A. Avifauna von Tunis. J. f. O. 1888, pp. 121-298.
Pp. 121-139 contain an account of the author's journey and of the country traversed, together with a preliminary sketch of the characteristic Birds of the country and a comparative list of the species found in Tunis and Algiers. Then follows the special part, which is replete with information of every description, the species being again compared with those of Algeria. Details are given of nests and eggs, measurements and coloration of specimens, range, status, &c. [See especially *Alamon margarita*, n. sp., pl. (*Alaudidae*), *Lanius rufus*, pl., *Telephonus* (*Laniidae*), *Phenicopter* (*Phenicopteridae*).]
- KOENIKE, F. Ein Tausendfuss im Huhnerei. Abh. Ver. Brem. x [1888], p. 294.
- KOLLER, H. Naamlijst van in Nederland in den natuurstaat waargenomen Vogels. Bijdr. Dierk. (Fees-nummer) 1888, No. 4, 80 pp.
- KOLTHOFF, G. [See *Lagopus bonasioides* (new hybrid), pl. (*Tetraonidae*).]

KUTTER, F. Ueber die wissenschaftliche Bedeutung der Oologie. Ber. Ver. Cassel, 1886-88, pp. 67-85.

LATASTE, F. [See *Striges* (food).]

LAWRENCE, G. N. [See *Catharus berlepschi* (*Turdidae*), *Troglodytes tobagensis* (*Troglodytidae*), n. spp.]

LEGGE, W. V. [See *Acanthornis* (*Sylviidae*).]

LE MESSURIER, A. Game, Shore, and Water Birds of India. Calcutta & London: 1888, 8vo, xvi & 153 pp., 121 illustr.

This is the third edition of a book which was originally privately printed in India (1874).

LEVERKÜHN, P. Zweite vorläufige Mittheilung die Entenkojen betreffend. MT. orn. Ver. Wien, 1888, pp. 149 & 150.

—. Welche Vögel nennt der Koran? Z. ges. Orn. 1887, pp. 413-424.

—. [See also *Syrnhaptes* (*Pteroclidæ*).]

LIEBE, K. T. Ornithologische Skizzen. xiv. Unsere Uferregenpfeifer (*Ægialitis minor*, *Æ. hiaticula*). Monat. Schutze Vogelw. 1888, pp. 59-68 & 91-93, pls. ii & iii. [Cf. Zool. Rec. xxiv, *Aves*, p. 17.]

LIEBERMANN, L. Embryochemische Untersuchungen. i. Weniger bekannte Bestandtheile des Hühnereies. Fett der Hühnereier. Ueber Nuclein. ii. Stoffwechsel des bebrütenden Eies bis zur völligen Entwicklung des Hühnchens. iii. Arbeiten zur speciellen chemie des Embryonalleibes. Math. Nat. Ber. Ung. 1887-88, pp. 224-295.

LILFORD, [LORD]. Notes on the Ornithology of Northamptonshire and Neighbourhood. Zool. 1888, pp. 456-466. [Cf. Zool. Rec. xxiv, *Aves*, p. 18.]

[See *Syrnhaptes* (*Pteroclidæ*).]

—. Notes on the Birds of Northamptonshire. J. Northampt. Soc. v [1888], pp. 41-53 & 85-93. [Cf. Zool. Rec., as above.]

—. Coloured Figures of the Birds of the British Islands. London: 1888, 8vo, pts. vi-ix.

Containing *Parus palustris*, *P. cæruleus*, *Motacilla sulphurea* (2 pls.), *M. flava*, *M. raii*, *Ampelis garrulus*, *Passer domesticus*, *Emberiza melanocephala*, *E. citrinella*, *E. cirius*, *E. rustica* (pt. vi), *Turdus merula*, *Accentor collaris*, *Linota cannabina*, *Pastor roseus*, *Picus major*, *Upupa epops*, *Nycticorax griseus*, *Bolaurus stellaris*, *Tetrao tetriz*, *Scolopax rusticula*, *Puffinus griseus*, *Procellaria bulweri* (pt. vii), *Sitta cæsia*, *Motacilla alba*, *M. lugubris*, *Lanius excubitor*, *Fringilla cælebs*, *Pyrrhula vulgaris*, *Alcedo ispida*, *Ardea cinerea*, *Anas boschas*, *A. crecca*, *Cuccabis rufa*, *Puffinus major* (pt. viii), *Daulias luscinia*, *Acrocephalus aquaticus*, *Locustella naevia*, *Anthus pratensis*, *Oriolus galbula*, *Passer montanus*, *Picus major*, *Merops apiaster*, *Perdix cinerea*, *Lagopus mutus* (3 pls.). The second plate of *Picus major* shews six heads of the bird, to illustrate the progress of change in coloration, in both sexes.

LINDNER, F. [See *Tringa* (*Scolopacidae*).]

LINK, J. A. Die Vögel der Hassberge und deren Umgebung. Ein Beitrag zur Vogelfauna Frankens. Ber. naturf. Ges. Bamberg, xiv, pp. 1-33.

181 species.

LISTER, J. J. On the Natural History of Christmas Island, in the Indian Ocean. P. Z. S. 1888, pp. 512-531, pls. xxvi (map) & xxvii.

This paper, which gives an account of a ten days' visit in H.M.S. 'Egeria,' consists of an introduction, a description of the physical features of the island, its geological history, vegetation, mammals, birds [pp. 517-529], reptiles and crustaceans. It is very important, as showing the line of demarcation between the Indo-Malay and Austro-Malay subregions; the land-birds having a decided affinity to those of the latter. [See *Zosterops natalis* (*Meliphagidae*), *Collocalia natalis* (*Cypselidae*), *Chalcophaps natalis* (*Columbidae*), *Urospizias natalis* (*Falconidae*), *Ninox natalis* (*Strigidae*), n. spp.]

LITTLEBOY, J. E. [THE LATE]. Notes on Birds observed in Hertfordshire in 1887, and on the Birds frequenting the Tring Reservoirs. Tr. Hertf. Soc. 1888, pp. 76-88. [Cf. Zool. Rec. xxiv, *Aves*, p. 18.]

LLAVE, P. DE LA. [See *Tetrao marmorata*, *T. cristata*, *T. guttata* (*Tetraonidae*), n. spp.]

LLOYD, W. What Birds indicate Proximity to Water, and at what Distance? Auk, 1888, p. 119. [Communicated by C. H. MERRIAM.]

LORENZ, L. V. [See PELZELN, A. V.]

LORENZ, T. [See *Phasianus persicus talischensis*, *P. colchicus septentrionalis* (*Phasianidae*), n. spp.]

°LOVASSY, A. Adalékok magyarország ornithológiájához. (Beiträge zur Ornithologie Ungarns.) Math. term. köz. xxii [1888], No. 5, pp. 213-240.

°——. Adalékok Gömörmegye madár faunájának ismeretéhez. (Beiträge zur Kenntniss der Vogelfauna des Gomorer Comitatus.) T. c. No. 6, pp. 243-268.

LUCAS, F. A. Notes on the Osteology of the Thrushes, *Miminae*, and Wrens. P. U. S. Nat. Mus. 1888, pp. 173-180, pl. xxxvii, 3 cuts.

The author's object was to ascertain whether the *Miminae* should be referred to the family *Troglodytidae*—where they are found in recent American works—or whether they come nearer to the *Turdidae*. The characters on which he chiefly relies are the measurements and shape of the *pars plana*, the maxillo-palatines, the costal process, and the coracoid. On comparison, he finds that the lacrymal is of little taxonomic value, nor is the form of the *roster* sufficiently constant to aid in the decision: this is also the case with the *pelvis* and the *ilia*. The conclusions drawn are: (1) that, osteologically speaking, the *Miminae* have as much right to constitute a separate family as the Thrushes or Wrens, though it is doubtful whether the characters are of sufficient value to allow us to establish such a family; (2) that they certainly should not be included in the *Troglodytidae*.

——. Abnormalities in the Ribs of Birds. Auk, 1888, pp. 329 & 330.

[LUCAS, F. A.] The Bird Rocks of the Gulf of St. Lawrence in 1887. *T. c.* pp. 129-135.

Notices a great decrease in the Gannets, Murres, and Razorbills.

—. The Flight of Birds. *Science*, xi [1888], pp. 58 & 59. [See ALLEN, J. A., COUES, E., NEWBERRY, J. S., TROWBRIDGE, W. P.; and *cf.* *Zool. Rec.* xxiv, *dres.* p. 22, *sub nom.* NEWBERRY, J. S.]

°. —. The Home of the Great Auk. *Pop. Sci. Monthly*, Aug. 1888, pp. 456-464.

—. [See also *Alca (Alcidæ)*.]

MCLLWRAITH, K. C. [See *Protonotaria (Mniotiltidæ)*.]

MACKAY, J. Y. The Development of the Branchial Arterial Arches in Birds, with special reference to the origin of the Subclavians and Carotids. *Phil. Trans.* [1888], clxxix (B), pp. 111-139, pls. xxii-xxv, 7 cuts.

The author's intention is to shew that Rathke's views as to the development of the above parts are not applicable to Birds, as far as concerns the origin of the carotid and subclavian arteries. He thinks that writer was misled by confining his studies too closely to Mammals and Reptiles, and that perhaps, even in the case of Chelonian and Crocodilian Reptiles, the present theories will be found inadequate. His division of the subject is into : (1) Anatomy of the Larger Arteries in Birds ; (2) Scheme of Development according to Rathke ; (3) Development of the Subclavian and Carotid Arteries, with description of Observations and summary of the Embryology of the same in the Bird ; (4) Comparative Anatomy of these arteries, with a detailed description of each in different *Vertebrata*, and a Summary.

MACPHERSON, H. A. Notes on the Birds of Cumberland. *Zool.* 1888, pp. 328-331.

Additional information. For former work, *cf.* *Zool. Rec.* xxiii, *Aves*, p. 24. [See *Saxicola (Sylviidæ)*.]

—. [See also *Serinus (Fringillidæ)*, *Puffinus (Procellariidæ)*.]

—, & A. H. On the Birds of the Isle of Eigg. *Zool.* 1888, pp. 412-419.

The authors add several species to W. Evans' list [*cf.* *Zool. Rec.* xxii, *Aves*, p. 9], while they reject 5.

MAGAUD D'AUBUSSON, L. [See *Ampelis (Ampelidæ)*, and *Laridæ*.]

MALL, F. P. The First Branchial Cleft of the Chick. *J. Hopk. Univ. Circ.* vii, 63, p. 38.

—. Development of the Eustachian Tube, Middle Ear, Tympanic Membrane, and Meatus of the Chick. *Stud. Biol. Lab. J. Hopkins Univ.* iv [1888], pp. 185-192, pls. xviii & xix.

MANX, T. J. *Modern Falconry*. *Ess. Nat.* 1888, pp. 209-217.

MANSEL-PLEYDELL, J. C. *The Birds of Dorsetshire ; a Contribution to the Natural History of the County*. London and Dorchester : 1888, 8vo, xvi & 179 pp., 10 cuts and frontisp.

A useful county list, containing many notes of interest, *e.g.*, on the Swannery at Abbotsbury, the Chough, the Dartford Warbler, the Harriers, &c. The bird recorded as *Puffinus obscurus* should be *P. griseus* ; see R. B. SHARPE, *Nature*, xxxviii [1888], p. 125, and J. C. MANSEL-PLEYDELL, *Zool.* 1888, p. 143.

——. *Decoys and Swan Marks*. P. Dorset Field Club, viii, pp. 1-8.

MANZELLA, A. [See GIGLIOLI, E. H.]

MARCACCI, A. De quelques anomalies obtenues dans les œufs de poule en les soumettant au mouvement. *Arch. Ital. Biol.* ix, p. 58.

MAREY, E. J. Valeurs relatives des deux composantes de la force déployée dans le coup d'aile de l'oiseau, déduites de la direction et de l'insertion des fibres du muscle "grand pectoral." *C.R.* cvii [1888], pp. 549-551.

MARTIN, H. *The Protection of Native Birds*. *Tr. N. Z. Inst.* 1885 [xviii], pp. 112-117.

MARTIN, L. A madárepülés általános elmélete. (*Allgemeine Theorie des Vogelfluges*.) Kolozsvári Orvos-term. társ. Ért. pp. 211-216.

MATHEW, M. A. *Additions to the List of Somersetshire Birds*. *Zool.* 1888, pp. 219-221. [See also SMITH, CECIL.]

MAZZARELLI, G. F. Su di alcune gravi anomalie anatomofisiologiche, riscontratesi in un piccione domestico. *Boll. Soc. Nat. Napoli*, 1888, pp. 20-24.

MEHNERT, E. Untersuchungen über das os pelvis der Vögel. *SB. Ges. Dorp.* viii [1887], pp. 212 & 213.

MENZBIER, M. A. *Ornithologie du Turkestan et des pays adjacents*. (Partie N. O. de la Mongolie, steppes Kirghiz, contrée Aralo-Caspienne, partie supérieure du bassin d'Oxus, Pamir.) Pt. I. Moscow : 1888, sm. fol., viii & 112 pp. ; with Atlas, pt. i, containing pls. iii, vi, vii, & x. [*Paridae* and *Falconidae*.]

The title-page bears at the head the name of N. A. SEVERZOFF, from whose notes the greater part of this work was drawn.

MENZBIER, M. *Ceuvres posthumes de Mr. le Dr. N. A. Severtzow*. II. *Etudes sur les variations d'âge des Aquilines paléarctiques et leur valeur taxonomique* (continued). *N. Mém. Soc. Nat. Mosc.*, xv [1888], p. 141-198. [*Cf. Zool. Rec.* xxii, *Aves*, p. 21.]

1, *Aquila chrysaëtos* ; 2, *A. nobilis* ; 3, *A. fulva*, *A. f. canadensis*, *A. f. kamtschatica*, Sev., *A. f. japonica*, Sev., *A. f. atlantica*, Sev., *A. f. homeyeri*, Sov., *A. f. regalis*, *A. f. barthélemyi* ; 4, *A. daphnea*. A table of measurements of the separate parts is added.

MERRIAM, C. H. Annual Report of the Department of Agriculture [U.S.], for the year 1887. Report of the Ornithologist and Mammalogist. Washington: 1888, 8vo, pp. 399-456, 1 pl., cut [not Birds].

Including (1) statement of work done ; (2) special reports [for which see FISHER, A. K.].

—. [See also *Euetheia*, *Spizella* (*Fringillidæ*).]

MERRILL, J. C. Notes on the Birds of Fort Klamath, Oregon. Auk, 1888, pp. 139-146, 251-262, & 357-366, with [important] remarks by W. BREWSTER. [*Cf.* Zool. Rec. xvi, *Aves*, p. 19.]

Admirable field-notes on the Birds and their breeding, most of the specimens obtained being from the immediate neighbourhood of the fort [4250 ft.], where there are several very large marshes. [See *Æthya* (*Anatidæ*), *Bartramia* (*Scolopacidæ*).]

MEYER, A. B. [See *Syrnhaptes* (*Pteroclidæ*).]

—, & HELM, F. III. Jahresbericht (1887) der ornithologischen Beobachtungstationen im Königreich Sachsen, nebst einem Anhang über das Vorkommen des Steppenuhns in Europa im Jahre 1888. Abh. u. Ber. Mus. Dresden, 1888-89. No. 1, iv & 124 pp. [*Cf.* Zool. Rec. xxiv, *Aves*, p. 21.] Also in Z. ges. Orn. 1887, pp. 194-412.

MIDDENDORFF, E. v. II. Ornithologischer Jahresbericht (1886) aus den Russischen Ostsee-Provinzen. Orn. 1888, pp. 273-300. [*Cf.* Zool. Rec. xxiv, *Aves*, p. 21.]

MILLER, G. S. [JUNR.]. [See *Poæcetes gramineus affinis*, n. subsp. (*Fringillidæ*).]

MITCHELL, F. S. [See *Vanellus* (*Charadriidæ*).]

MONTLEZUN, A. DE. [See *Anatidæ*.]

MÜLLER, A. Zur Ornithologie des unteren Congo-Gebietes. Z. ges. Orn. 1887, pp. 425-434.

76 species are given as occurring in the above locality, of which 10 or 12 appear to be new to it. The collection concerned was made at Landana, just north of the Congo.

MÜTZEL, —. [A double feather of a Parrot.] J. f. O. 1888, p. 100.

NANCARROW, R. H. [See *Acanthiza* (*Sylviidæ*).]

NELSON, E. W. Report upon Natural History Collections made in Alaska between the years 1877 and 1881. Edited [Revised and brought up to date] by HENRY W. HENSHAW. [Being No. III of Arctic Series of Publications issued in connection with the Signal Service, U.S. Army.] Washington: 1887, 4to, 337 pp., 21 pls. [Birds, pp. 21-226, pls. i-xii.]

This important work consists of a narrative of Nelson's explorations; followed by a description of the fauna, in four parts, of which Birds constitute the first; while a partial bibliography is appended. Interesting notes, some of great length, are given on many species; as, for instance,

the various Geese, Sandpipers, Grouse, and Gulls: in fact, the district appears to be a paradise for Water-Birds of all sorts. Eskimo names are added in most cases. [For the plates see the families: also see *Fulco* (*Falconidae*), *Budytes* (*Motacillidae*), and cf. Zool. Rec. xx & xxi, pp. 11 & 23.]

NELSON, T. II. Ornithological Notes from Redcar. Zool. 1888, pp. 135-138.

NEWBERRY, J. S. The Flight of Birds. Science, xi [1888], pp. 9 & 10. [Cf. Zool. Rec. xxiv, *Aves*, p. 22, and see ALLEN, J. A., COUES, E., LUCAS, F. A., TROWBRIDGE, W. P.]

NEWMAN, E. [See CHRISTY, M.]

NEWTON, A. Encycl. Brit. ed. 9. Vol. xxiii: Artt. +Tanager [*Tanagridae*], +Tapaculo [*Pteroptochidae*, fig. of *P. albicollis*], Teal [*Anatidae*], Tern [*Sternidae*], +Thrush [*Turdidae*], +Tinamou [*Crypturi*, fig. of *Rhynchotus rufescens*], Titmouse [*Paridae*], +Tody [*Todidae*, fig. of *T. viridis*], +Toucan [*Rhamphastidae*], +Touraco [*Musophagidae*, fig. of *T. albicristatus*], Tree-creeper [*Certhiidae*], +Trogon [*Trogonidae*], Tropic-bird [*Phaethontidae*], +Trumpeter [*Psophiidae*, fig. of *P. leucoplerus*], +Turkey [*Phasianidae*], Turnstone [*Charadriidae*]. Vol. xxiv: Artt. +Vulture [*Sarcorhamphidae* = *Cathartidae*, auctt., and *Vulturidae*, fig. of *Gypagus papa*], Wagtail [*Motacillidae*], +Warbler [*Sylviidae* and *Mniotiltidae*], Waxwing [*Ampelidae*], Weaver-bird [*Ploceidae*], Wheatear [*Sylviidae*], Whitethroat [*Sylviidae*], Wigeon [*Anatidae*], Woodcock [*Scolopacidae*], +Woodpecker [*Picidae*, fig. of *Melanerpes formicivorus*], Wren [*Troglodytidae*], Wryneck [*Picidae*], +Zosterops [*Zosteropidae*]. Those marked + are important. [Cf. Zool. Rec. xxiv, *Aves*, p. 22.]

— [See also *Syrnhaptes* (*Pteroclide*).]

NEWTON, A. & E. [See *Zosterops* (*Meliphagidae*).]

NEWTON, E. Address to the Norfolk and Norwich Naturalists' Society. Tr. Norw. Soc. iv, pp. 537-547.

Treating of the extermination of the rarer species of Birds and of the Birds of the Mascarene Islands, including the Seychelles, of which the first complete list published is appended (pp. 548-554). 54 are peculiar to the group, while 17 are extinct. [See *Gullinula* (*Rallidae*).]

NIKOLSKI, A. M. O faune pozvonotschnikhe jivotnikhe dna balkhachskoi kotlovini. Trudui St. Petersburg Nat. xix [1888], pp. 59-188.

[Ires, pp. 96-150; 226 spp.] On the fauna of vertebrate animals in the Balkash Valleys (Central Asia).

NOACK, T. [See DÜRRIS, F.]

NORMAN, G. C. [See *Coccytes* (*Cuculidae*).]

NORTH, A. J. Notes on the Nidification of certain Australian Birds. P. Linn. Soc. N.S.W. ii, pp. 935-988.

Platycercus burnardi, *Psephotus haematogaster*, *Trichoglossus chlorolepidotus*, *Xenorhynchus australis*.

[NORTH, A. J.] Notes on the Nests and Eggs of certain Australian Birds. *Op. cit.* iii [1888], pp. 146-149. [*Cf.* Zool. Rec. xxiv, *Aves*, p. 23.]

Eopsaltria capito, *Stictoptera annulosa*, *Alurædus maculosus*, *Phaps histrionica*.

—. A List of the Birds found in the County of Cumberland, New South Wales. *T. c.* pp. 1773-1780.

—. [See also *Rhipidura* (*Muscicapidæ*), *Malurus* (*Timeliidæ*), *Alcyone* (*Alcedinidæ*).]

OATES, E. W. On the Birds of Bhamo, Upper Burmah. *Ibis*, 1888, pp. 70-73, pl. i.

The writer has compared the specimens found by the Rangoon Museum collector with Count Salvadori's list of those met with by L. Fea. He only discusses those new to that list—34 species. [See *Acridotheres*, pl. (*Sturnidæ*).]

Ogilvie-Grant, W. R. Second List of the Birds collected by Mr. C. M. Woodford in the Solomon Archipelago. *P. Z. S.* 1888, pp. 185-204, pl. x. [*Cf.* Zool. Rec. xxiv, *Aves*, p. 23.]

This second consignment contains examples of 66 species, from Aola and Rovatu (Guadalcanar) and Rubiana, obtained between April and July, 1887. A list of native names is given by the collector, while, besides further specimens of rare Birds, five forms are new to science. [See *Nasiteria aola* (*Psittaci*), *Myzomela sharpii* (*Meliphagidæ*), *Phlogænas solomonensis* (*Columbidæ*), *Ardeiralla woodfordi*, *Nycticorax mandibularis* (*Ardeidæ*), n. spp.]

—. [See also *Carpophaga everetti*, n. sp., *Treron* (*Columbidæ*), *Ruticilla* (*Sylviidæ*).]

OLPHE-GALLIARD, L. Contributions à la Faune Ornithologique de l'Europe Occidentale. 1888, 8vo. Pt. xxiii, 66 pp. [*Tenuirostres inessores* (*Oriolidæ*), *Tenuirostres ambulatores* (*Upupidæ*, *Tichodromadidæ*), *Tenuirostres scansores* (*Certhiidæ*, *Sittidæ*)] ; Bordeaux & Berlin. Pt. xxiv [*Scansores scansores* (*Picidæ*), *Scansores inessores* (*Cuculidæ*)], pt. xxv [*Syndactyli* (*Alcedinidæ*, *Meropidæ*, *Coraciidæ*)], pts. iii & iv [*Fuligulinæ*, *Anatinæ*] ; Lyon & Berlin : 96, 24, 109, 107 pp. respectively. [*Cf.* Zool. Rec. xxiv, *Aves*, p. 23.]

Two figures of heads of *Somateria mollissima* and *S. dresseri* are reproduced from "Water Birds of N. America."

—. Errata to Translation of Severzoff's "Faune des Vertébrés du Turkestan. Les Oiseaux. [*Cf.* Zool. Rec. xxiv, *Aves*, p. 23.] Beilage zu Z. ges. Orn. 1887, Heft. iii & iv, 7 pp.

PALACKÝ, J. Die Vogelwelt Europas. *MT. orn. Ver.* Wien, 1888, pp. 127-129.

PALMER, E. G. W. Note on Sympathy and Foster-Parentage among Birds. *P. Linn. Soc. N.S.W.* iii [1888], pp. 740 & 741.

PALMER, W. [See SMITH, H. M.]

PARKER, T. J. On an "Index Collection" for small Zoological Museums, in the Form of a Genealogical Tree of the Animal Kingdom. Tr. N. Z. Inst. 1885, [xviii], pp. 73-78.

—. [See also *Notornis* (*Rallidae*), *Apteryx* (*Apterygidae*).]

PARKER, W. K. On the Structure and Development of the Wing in the Common Fowl. Phil. Trans. [1888], clxxix (B), pp. 385-398, pls. lxii-lxv. [Received under the title of "Morphology of Birds."]

The author has worked out the structure of the carpus in the chick of seven days and older, finding that the "radiale" and "ulnare" show evidence of being compound structures, probably containing within themselves remnants of an "intermedium" and a "centrale." He has figured various stages in the development of the three elements of the distal row of carpal elements, and has traced them up to their final vestigial rudiments in the co-ossified "carpo metacarpus" of the adult, verifying the results by comparison with other Birds. He has next traced the development of the three metacarpal bones, with their changes. Here he finds "certain small cartilaginous elements," which leave their traces in the full-grown wing. Lastly, he has observed afresh the small distal phalanges in the Fowl and other Birds, and the rudimentary nails or claws of the second and third digits; and has added a short revision of the structure of the wing in the *Ratite*.

—. On the Secondary Carpals, Metacarpals, and Digital Rays in the Wings of existing Carinate Birds. P. R. Soc. xliii, pp. 322-325.

—. On Remnants or Vestiges of Amphibian and Reptilian Structures found in the Skull of Birds, both *Carinate* and *Ratite*. T. c. pp. 397-402.

—. On the Vertebral Chain of Birds. T. c. pp. 465-482.

—. On the presence of Claws in the Wings of the *Ratite*. Ibis, 1888, pp. 124-128, 4 cuts.

On the discovery of a small claw on the third digit of the wing in *Rhea* and *Struthio*, with comparison of the manus of *Casuarus*, *Dromæus*, and *Apteryx*—tending to shew the archaic condition of that part.

—. Note on Long-Faced Birds. T. c. p. 217.

Long-faced Wading Birds may be old forms, and long-faced Humming-Birds new.

PATCHOSKI, I. O faunye i florye okrestnostei g. Vladimira-Volinskago. [On the fauna and flora of the neighbourhood of Vladimir-Volhynski.] Zapiski Kiev. pp. 299-380. [Birds, pp. 307-311.]

PEEK, H. A Collection of British Birds at Rousdon. London: 1888, sm. 4to, 27 pp., 6 pls.

PELZELN, A. v., & LORENZ, L. v. Typen der ornithologischen Sammlung des k. k. naturhistorischen Hofmuseums. (iv Theil—Conclusion.) Ann. Hofmuseum Wien, iii, pp. 37-62.

PERKINS, H. J. Seven Months up the Puruni River [Domegara]. Timebri, ii, pp. 314-338.

A few notes on Birds are given.

PHILIPPI, R. A. Ornithologie der Wüste Atacama und der Provinz Tarapacá [Chili]. Ornith., 1888, pp. 155-160.

An introduction treating of the district, precedes a list of 80 species.

PHILLIPS, E. O. A Visit to the Bird [Cormorant] Rock ("Craig-y-Deryn"), Towyn, North Wales. Zool. 1888, pp. 380-382.

PICAGLIA, L. Note ornitologiche. Atti (Rend. Mem.) Soc. Mod. Rend. [1887] (3) iii, p. 121. [Cf. Zool. Rec. xxiii, Aves, p. 30.]

—. Mammiferi ed Uccelli raccolti durante il viaggio di circumnavigazione della R. Corvetta "Vettor Pisani" negli anni 1882-85. T. c. pp. 21-22.

14 species of Birds.

—. Elenco degli Uccelli del Modenese. Op. cit. vii, pp. 145-211.

The classification followed is that of Salvadori. Vernacular names are given, and the subject is divided into general and special parts. [See DE-CARLINI, A.]

PIETSCH, J. Herleitung und Aussprache der Wissenschaftlichen Namen in dem E. F. von Homeyer'schen Verzeichnisse der Vögel Deutschlands. Wien: 1888, 8vo, 57 pp. [Cf. Zool. Rec. xxii, Aves, p. 13.]

Derivation of the Latin names of families, genera and species, with the German names added.

—. Die Vögel *Taurus* und *Anthus* des Plinius Secundus. Monat. Schutze Vogelw. 1888, pp. 248-250.

PLESKE, T. Revision der Turkestanischen Ornithologie. Nach Sammlungen des verstorbenen Conservators Valerian Russow. Mém. Ac. Petersb. xxxvi, No. 3, 58 pp.

This list includes 419 species, of which *Falco jugger*, *Loxia curvirostra*, *Luscinola melanopogon*, *L. neglecta*, *Acrocephalus stentoreus*, *Phylloscopus occipitalis*, *P. humii*, *Sylvia minuscula*, *S. althea*, *Ruticilla mesoleuca*, *Saxicola finschi*, *Pratincola caprata*, *Sturnus poltoratzkii*, *Trochalo-pterum lineatum*, *Siphia ruficauda*, *Ardea comata*, *Anas angustirostris*, and *Hydrochelidon leucoptera* are new to the region. Many nests and eggs were collected with the Birds, some of which are described in the text.

PORTIS, A. Contribuzioni alla Ornithologia Italiana. Mem. Ac. Tor. xxxvi, pp. 361-384, 2 pls. [Omitted in Zool. Rec. xxii (1885).]

1. L'ornitholite di Monte Zuello. *Palaeogrus princeps*, Portis. Tab. 1, figs. 1-4 (lower extremity of the tibia).

2. L'ornitholite miocenica di Ceva. *Chenornis graculoides*, Portis. Tab. 1, fig. 5 (slab with impressions of various parts).

3. L'ornitholite di Monte Bamboli. *Anas lignitifila*, Salvad.

4. L'ornitholite di Peschiera. *Grus turfa*, Portis. Tab. 2, figs. 1-13 (various parts).

5. Tracce di Uccelli. i. Le impronte di penne del Bolca.

ii. L'Ornitholite di Argentera.

iii. Gli Ornitholiti di Verrua (collina di Torino).

O. taurinus, Portis.

6. Avanzi fossili ornitici anteriormente noti.

[PORTIS, A.] Contribuzioni alla Ornitolitologia Italiana. *Op. cit.* xxxviii, pp. 181-203, 1 pl.

1. Le ornitoliti di Sinigaglia. *Totanus scarabellii*, Portis, fig. 1 (leg). *Rallus dubius*, Portis, fig. 2 (sternum). *Sitta senegalliensis*, Portis, fig. 3 (head, right wing and part of left, part of body). *Alauda gypsorum* Portis, fig. 4 (vertebræ and extremities). Feathers of *Ornitholithes procaccinii*, Portis, figs. 5-8.

2. Le ornitoliti dell' Anconitano. Feathers of *Ornitholithes bosniaskii*, Portis, figs. 9 & 10.

3. Ornitoliti del Gabbro. *Alauda major*, Portis, fig. 11 (part of femur, legbones). *Tringa (Ornithichnites)*, Portis, fig. 12 (foot). Quills of *Ornitholithes gabbrensis*, Portis, figs. 13-17.

4. Uccelli fossili di Licata. Conirostre indeterminato. Fig. 18 (wings, coracoid, scapula).

5. Uccelli fossili del Pliocene Toscano. *Fuligula uretina*, nob., *F. sepulta*, nob., *Fulica* ? sp. (*pisana*, nob.), *Numenius* sp. (*pliocenus*, nob.), *Falco* sp. (*pisanus*, nob.), *Uria ausonia*, nob.

6. Uccelli sovrapiocenicici di Palermo.

7. Uccelli della stazione preistorica o dosso di Castello nel Trentino.

8. Uccelli del Buco della Volpe sopra Rovenna (Lago di Como).

9. Uccelli della Torbiera della Cataragna.

10. Uccelli di Breccie e depositi quaternari toscani.

11. Uccelli della Terramara del Castellaccio.

12. Uccelli della Valle della Vibrata.

[*Cf. also Ornithichnes argenteræ*, Portis (figured and described in 1879), *Atti Ac. Tor. xv.*]

PRICE, W. W. [See *Cardellina (Mniotiltidae)*.]

°PRJEVALSKI, N. M. Retvertoye puteshestviye v tsentrailnoi Azii Ot Kiaktii na istoki joltoi réki, izslédovaniye Sévernnoi okrainii Tibeta, i put cherez Lob-nor pv basseinu Tarima. [A Fourth Journey into Central Asia, from Kiakhta to the Sources of the Yellow River, Exploration of the Northern Border-land of Tibet, and a Route via Lob-nor along the Basin of the Tarim.] St. Petersburg: 1888, 3 maps, 29 photos., 3 cuts. [Published by the Imp. Russ. Geograph. Soc.]

PRYER, H. [THE LATE]. [See *Collocalia (Cypselidae)*.]

QUELCH, J. J. A Collecting Trip on the Abary Creek [Donerara]. *Timehri*, ii, pp. 358-378.

A few notes on Birds are included.

RADDE, G. Ornithologisches aus Transcaucasien. *Monat. Schutze Vogelw.* 1888, pp. 97 & 98.

RAE, J. Notes on some of the Birds and Mammals of the Hudson's Bay Company's Territory, and of the Arctic Coast of America. *J. L. S.* xx [1868], pp. 136-145, and also *Can. Rec.* iii, [p. 125-136.

RAEBURN, H. The Summer Birds of Shetland, with Notes on their Distribution, Nesting, and Numbers. P. Phys. Soc. Edinb. 1887-88, pp. 542-562.

An interesting paper, though several districts appear to have been unvisited, in consequence of which extraneous information has often been relied upon.

RAMAGE, G. Notes on a Visit to Fernando Noronha. T. c. pp. 426-438.

A few notes on the Birds are given, but no scientific names.

*RAMÓN Y CAJAL, S. Estructura de los centros nerviosos de las Aves. Rev. trimestral de histol. normal y patol. Año I, No. 1, 1888, pp. 1 et seqq. [Review in Z. wiss. Mikr. v, pp. 373 & 374.]

RAMSAY, E. P. Tabular List of all the Australian Birds at present known to the Author, showing the Distribution of the species over the Continent of Australia and adjacent Islands. Sydney: 1888, 8vo, 38 pp., map.

This work is the forerunner of a systematic Index to the Australian avifauna. The author marks with an asterisk all species contained in the Australian Museum, and adds a list of others from Lord Howe and Norfolk Islands. The present being a new edition, and very many specific names being altered and corrected, it should be consulted by all who are interested in the Birds of the region. Considerable changes having also taken place in the boundaries of the Colonies, the new map is of equal importance. [See *Philemon occidentalis* (Meliphagidæ), *Pachycephala occidentalis* (Laniidæ), *Ninox albaria* (Striges), *Ædicnemus longipes* (Ælicnemidæ), n. spp., *Platycercus pennanti nigrescens* (Psittaci), n. subsp.]

— List of Birds collected at Derby, North-West Australia, by the late T. H. Boyer-Bower, Esq, with notes. P. Linn. Soc. N.S.W. ii [1887], pp. 165-173.

152 species.

— See also *Philemon occidentalis* (Meliphagidæ), *Gerygone thorpii*, *Piezorhynchus sericeus* (Muscicapidæ), n. spp., *Onychoprion*, *Anous* (Laridæ), *Sula* (Sulidæ).]

RATZEL, F. [See SCHWEINFURTH, G.]

*REGALIA, E. Unghie ai diti i e ii della Mano in Uccelli italiani. P.-v. Soc. Tosc. 1888, p. 86.

REICHENAU, W. v. Bemerkungen über das Vorkommen der Vögel von Mainz und Umgegend. Ornith. 1888, pp. 647-666.

199 species.

REICHENOW, A. Die Begrenzung Zoogeographischer Regionen vom ornithologischen Standpunkt. Zool. Jahrb. iii, pp. 671-704, pl. xxvi. [Cf. Zool. Rec. xxiii, Aves, p. 31.]

A full and clear discussion of the regions and of the Birds peculiar to each or common to several, with tables of distribution. The author recognizes as zones the [Palæ- and Ne-] Arctic, the Western [N. and S. America, except Arctic part], the Eastern [Africa, except Madagascar,

Europe and Asia (with islands), except Arctic part], the Southern [Australia, N. Zealand, N. Guinea, and neighbouring Is.], the Antarctic, and that of Madagascar.

[REICHENOW, A.] Handwörterbuch der Zoologie, Anthropologie und Ethnologie. Bd. v. Breslau: 1888, 8vo, 640 pp. (Landschaft-Nervenleiste).

REID, S. G. Notes on the Birds of Teneriffe. *Ibis*, 1888, pp. 73-83.
[*Cf.* Zool. Rec. xxiv, *Aves*, p. 26.]

The author's list includes 71 species, with the native names of the majority. [See *Lanius* (*Laniidæ*).]

REISCHEK, A. Observations on the Habits of New Zealand Birds, their Usefulness or Destructiveness to the Country. *Tr. N. Z. Inst.* 1885 [xviii], pp. 96-104.

— Notes on the Habits of some New Zealand Birds. *T. c.* pp. 105-107.

REISER, O. Beiträge zur Kenntniss der Vögel Bosniens. *J. f. O.* 1888, pp. 38-58.

A very full account of 23 of the less common Birds, seen during a tour, with descriptions of the plumage and measurements of specimens, and an account of the nesting and routes of migration of several species. [See *Picus* (*Picidæ*).]

° —. Katalog des bosnisch-herzegowinischen Landes-Museum. Sarajevo: 1888.

— Liste der bisher durch Belegstücke für Bosnien und die Herzegowina nachgewiesenen Vögel. *MT. orn. Ver.* Wien. 1888, p. 35.

RICHMOND, C. W. An Annotated List of Birds breeding in the district of Columbia. *Auk*, 1888, pp. 18-25; *cf. t. c.* p. 147 & 148.

This is a mere catalogue of the species found near Washington, with very little information. Coues and Prentiss treat of the same part in their "Avifauna Columbiana" [*Zool. Rec.* xxi, *Aves*, p. 10].

RIDGWAY, R. Catalogue of a Collection of Birds made by Mr. Chas. H. Townsend, on Islands in the Caribbean Sea and in Honduras. *P. U. S. Nat. Mus.* 1887, pp. 572-597.

The localities whence the specimens came are Grand Cayman and Swan Islands, Caribbean Sea; Ruatan Island, Truxillo, and Segovia River, Honduras. [See *Dendreca auricapilla* (*Mniotiltidæ*), *Contopus vicinus* (*Tyrannidæ*), *Tigrisoma excellens*, *Butorides saturatus* (*Ardeidæ*), *Thamnophilus intermedius* (*Formicariidæ*), *Engyptila vinaceiventris*, *Columba purpureotincta* (*Columbidæ*), *Thalurania townsendi* (*Trochilidæ*), n. spp., *Columbigallina passerina insularis* (*Columbidæ*), *Centurus santacruzi pauper* (*Picidæ*), *Porzana erilis vagans* (*Rallidæ*), *Colinus nigrogularis segoviensis* (*Tetraonidæ*), *Pitylus polioaster scapularis* (*Tanagridæ*), *Sturnella magna inexpectata* (*Icteridæ*), u. subsp.]

— [See also *Psultriparus santariter*, n. sp. (*Paridæ*), *Hemiura*, n. g., *Thryothorus herberti*, *T. oyapocensis*, *T. rufalbus castanonotus*, *Thryophilus tænioptera*, *Cyphorhinus griseolateralis*, *Campylorhynchus castaneus*, *C. curvirostris*, *Microcerculus daulias* (*Troglodytidæ*),

Catharus berlepschi, *C. fumosus*, *Mimus gracilis leucophæus*, *Harporhynchus longirostris sennetti* (Turdidæ), n. spp. & subsp., *Colaptyx inornatus*, n. g. & sp., *Ornithion napæum*, *Tyrannulus reguloides*, n. spp. (Tyrannidæ), *Attila viridescens*, n. sp., *Tityra personata griseiceps*, n. subsp. (Colingidæ), *Dichrozona zononota*, *Rhagmatorhina gymnops*, n. gg. & spp., *Thamnophilus inornatus*, *Phlogopsis bowmani*, n. spp., *Heterocnemis? hypoleuca*, n. sp.? (Formicariidæ), *Dendroornis fraterculus*, *D. lawrencii*, *D. l. costaricensis*, *Dendrocolaptes obsoletus*, n. spp. & subsp. (Dendrocolaptidæ), *Accipiter velox rufilatus*, n. subsp. (Falconidæ), *Columba guayaquilensis*, *Zenaida jessæ*, n. spp. (Columbidæ), *Acanthidops*, (Fringillidæ), *Psittacula* (Psittaci), *Estrelata* (Procellariidæ), *Troglodytidæ*.]

RIDLEY, H. N. A Visit to Fernando do Noronha. Zool. 1888, pp. 41-49.

A very interesting paper on the Brazilian Peul Settlement, giving a description of the zoology as a whole. Amongst other Birds found there was a new species of the family Tyrannidæ [*Elainea ridleyana*], q. v., while the breeding habits of *Gygis candida* and *Zenaida noronhæ* are noticeable.

ROBINSON, W. Notes on some Albino Birds presented to the U. S. National Museum, with some Remarks on Albinism. P. U. S. Nat. Mus. 1883, pp. 413-416.

RODDY, H. J. [See *Falconidæ*, *Cathartes* (Cathartidæ), *Syrnium* (Striges).]

ROGERON, G. [See *Anatidæ* (fam. & *Chloephaga*).]

ROSSIKOFF, —. Migrants across the Caucasus [note taken from "Caucasus" newspaper]. Ed. Nature, xxxix, p. 86.

ROVIEROSA, J. N. Apuntes para la Zoologia de Tabasco. Vertebrados observados en el territorio de Macuspana. Nat. Mex. vii, pp. 345-389.

The Birds are contained in pp. 363-389. Not very many species are mentioned, but notes of considerable length are given.

SAINT REMY, G. Recherches sur la portion terminale du canal de l'ependyme chez les Vertébrés. Month. Int. J. Anat. Phys. 1888, pp. 17-38 & 49-63, pl. i.

[Aves, pp. 37-52—*Gallus*, *Anas*, *Columbu*.]

SALVADORI, T. Catalogo di una Collezione di Uccelli dello Scioa fatta dal Dott. Vincenzo Ragazzi negli anni 1884, 1885, 1886. Ann. Mus. Genov. xxvi, pp. 185-326. [Also sep.]

This long and important paper adds much information to the author's former article on Antinori's collection from the same district [cf. Zool. Rec. xxi, Aves, p. 28]. 385 species are now recognized in all, of which 57 are new to Shoa. The introductory portion treats of the labours of different collectors in the region, while the special part gives a very full synonymy, with descriptions and general notes. [See *Cypselus shelleyi*, *C. myoptilus*

(*Cypselida*), *Cinnyris* (*Eleocerthia*) *ragazzi*, *Chalcomitra* *scioana* (*Nectariniida*), *Cisticola* *cinereola* (*Timeliida*), *Fringillaria* *polioplaura*, *Serinus* *flavigula*, *S. reichenowi* (*Fringillida*), *Estrela* *nigrimentum*, *Urobrachia* *traversii* (*Ploceida*), n. spp.]

[SALVADORI, T.] Uccelli dello Scioa e dell' Harar raccolti dal Dott. Vincenzo Ragazzi. Ann. Mus. Genov. xxvi, pp. 525-544. [Also sep.]

This consignment adds 11 species more to the Birds of Shoa. The collection was made by Ragazzi, a little later than that described above (November, 1886-February, 1887), while marching with King Menelek against Harar. [See *Francolinus* *spilogaster*, *F. castaneicollis*, n. spp. (*Phasianida*), *Lophotis* (*Otidida*).] A map of the district is to be found with Ragazzi's paper, "Da Antolo ad Harar," in [Mem.] Boll. Soc. Geogr. Ital., Jan. 1888.

—. On the Dates of Publication of Bonaparte's "Iconografia della Fauna Italica." *Ibis*, 1888, pp. 320-325.

The author gives a list of the species of Birds described and figured in the above work, and adds the respective dates of publication of the "Fascicoli" containing them, with that of the "Introduzione."

[Also published as "Le date della pubblicazione della 'Iconografia della Fauna Italica' del Bonaparte, ed Indice delle specie illustrate in detta opera," in Boll. Mus. Zool. Anat. Comp. Torino, iii, No. 48 (25 pp.).]

—. [See also *Syrnhaptes* (*Pteroclidæ*), *Ægialitis* (*Charadriida*).]

SALVIN, O. A List of the Birds of the Islands of the Coast of Yucatan and of the Bay of Honduras. *Ibis*, 1888, pp. 241-265.

The specimens mentioned in this paper were collected by G. F. Gaumer on the islands of Meco, Holbox, Muger, Cozumel, Ruatan, and Bonacca; the author intends, in conclusion, to sketch the distribution of species over the district, which appears to be on one of the chief lines of migration. [See *Phenicothraupis* *insularis*, n. sp. (*Tanagridæ*), *Hirundo* (*Hirundinida*), *Dendroica*, *Siurus*, *Geothlypis* (*Mniotiltida*), *Vireo* (*Vireonida*), *Cardinalis* (*Fringillida*).]

—. [See also *Procellariida* fam., and GODMAN, F. D.]

SANDOR, L. Adalékok Magyarország Ornithológiájához. Vonatkozólag a Fészkelési és Elterjedési Viszonyokra. Math. term. köz. xxii [1887], pp. 213-240.

—. Adalékok gömörmege madárfaunájának ismeretéhez. *T. c.* pp. 241-268.

SANFELICE, F. Spermatogenesi dei Vertebrati. Boll. Soc. Nat. Napoli, 1888, pp. 42-98, pls. ii & iii.

[Birds, pp. 66-70. Those noticed are *Gallus bankiva*, *Ligurinus chloris*, *Passer italiae*.]

Also in Arch. Ital. Biol. x, pp. 69-122 (as well as a translation into French).

SANGALLI, G. Questioni di teratologia.—Sull'origine dei mostri doppi.—Rara coalescenza di due vitelli entro un uovo di pollo.—Idroencephalocoele anteriore per aderenza delle membrane dell' uovo.—Reni succenturiati nei vitelli. Rend. Ist. Lombardo, xxi, pp. 650-662.

SAUNDERS, H. An Illustrated Manual of British Birds. Pts. i-ix. London: 1888, 8vo, pp. 1-360, cuts.

In this work, while never losing sight of the necessary scientific accuracy, the author is careful to avoid statistical and other matter unlikely to be of wide interest. Each species is limited to two pages, while in a few cases only one is filled, without a figure; the classification followed being, in the main, that of the B. O. U. list. The majority of the cuts are the same as in the 4th Ed. of "Yarrell," but others are added (with letterpress) of *Saxicola isabellina*, *S. stapanina*, *S. deserti*, *Sylvia nisoria*, *Tichodroma muraria*, *Acanthyllis caudacuta*, and *Falco cenchrus*; while fresh illustrations of *Circus rufus*, *Astur palumbarius*, and *Falco aesalon* are substituted for the originals.

— [See also *Querquedula* (*Anatida*).]

SCHIAVUZZI, B. Materiali per un' avifauna del Litorale austro-ungarico. Boll. Soc. Adr. x (1887) pp. 154-183.

A continuation of the subject from vol. vii of the above work, which will be useful in determining the range of species in the Adriatic district.

SCHIER, W. Die Verbreitung der mövenartigen Vögel (*Laridæ*) in Böhmen. MT. orn. Ver. Wien, 1888, pp. 9 & 10. [Cf. Zool. Rec. xxiv, *Aves*, p. 29.]

— Die Verbreitung der Dickschnäbler (*Crassirotres*) in Böhmen. *T. c.* pp. 124 & 125.

SCHWEINFURTH, G., RATZEL, F., FELKIN, R. W., & HARTLAUB, G. Emin Pasha in Central Africa; being a collection of his Letters and Journals. Translated by Mrs. R. W. FELKIN. London: 1888, 8vo, xviii & 547 pp., 2 portraits, map. [Cf. Zool. Rec. xxiv, *Aves*, p. 14.]

This work contains an interesting chapter on the Geography of Plants and Animals [reprinted from "Ausland, 1882," and MT. Ver. Erdkunde zu Leipzig, 1887] pp. 390-407.

SCLATER, P. L. Catalogue of the Passeriformes, or Perching Birds, in the Collection of the British Museum. *Oligomyodæ*, or the Families *Tyrannidæ*, *Oxyrhamphidæ*, *Pipridæ*, *Cotingidæ*, *Phytotomidæ*, *Philepittidæ*, *Pittidæ*, *Xenicidæ*, and *Eurylæmidæ*. Vol. xiv of the series. London: 1888, 8vo, xx & 495 pp., 26 pls., cuts. [Cf. Zool. Rec. xxiii, *Aves*, p. 34.]

Owing in a great measure to the Salvin-Godman collection, the number of species recognized in this volume is even greater than in vol. xii [*infra*], being 665 as against 559. Keys are given to the subfamilies, as well as to the genera and species, where necessary; while a large number of the latter were originally described by the author. [See *Ochthornis*, *Cænotriccus* (*Tyrannidæ*), *Coracopitta* (*Pittidæ*), n. gg., *Chloropipo holochlora*, n. sp. (*Pipridæ*), *Empidochanes salvini*, n. sp., *Euscarthmus*, *Tyranniscus*, *Elainea*, *Legatus*, *Myiozetetes*, *Pitangus*, *Megarhynchus*, *Myiobius*, *Myiarchus* (*Tyrannidæ*), *Pipra*, *Machæropterus* (*Pipridæ*), *Tityra* (*Cotingidæ*), *Pitta* (*Pittidæ*); and for plates, *Agriornis*, *Tænioptera*, *Ochthodactyla*, *Ochthaca*,

Platyrhynchus, *Euscarthmus*, *Leptopogon*, *Tyranniscus*, *Eluinea*, *Rhynchocyclus*, *Sirystes*, *Muscivora*, *Onipodectes*, *Myiobius* (*Tyrannidae*), *Ceratopipra*, *Heteropelma*, *Heterocercus* (*Pipridæ*), *Hadrostomus*, *Pachyrhamphus*, *Iodopleura* (*Cotingidæ*).]

[SCLATER, P. L.] Notes on the Emperor Penguin (*Aptenodytes forsteri*). *Ibis*, 1888, pp. 325-334, 4 cuts. [See *Spheniscidæ*.]

——. [See also SHARPE, R. B., & WITHINGTON, F.]

——, & HUDSON, W. H. Argentine Ornithology. A descriptive Catalogue of the Birds of the Argentine Republic. Vol. I. London: 1888, 8vo, 208 pp., 10 pls.

This volume contains the *Passeres* (19 Families) found in the above district, which is included in the Patagonian sub-region by Solater. An important feature in the work is the Introduction [issued with vol. II in 1889], where we find the chief characteristics of the avifauna well and clearly described, with a table of over- or under-representation, as compared with the whole Neotropical region, and a special account of each family. The Argentine list comprises 434 species in all, 229 of them being Passerine; and among these again the *Fringillidæ*, *Dendrocolaptidæ*, and *Tyrannidæ* predominate, especially the last. 10 genera are believed to be peculiar to the country. The scientific portion, &c., is entirely due to Solater, Hudson being responsible for the personal observations. [See for plates *Mimus* (*Turdidæ*), *Cinclus* (*Cinclidæ*), *Cyclorhis* (*Vireonidæ*), *Stephanophorus* (*Tanagridæ*), *Saltatricula* (*Fringillidæ*), *Molothorus* (*Icteridæ*), *Tenioptera* (*Tyrannidæ*), *Phytotoma* (*Phytotomidæ*), *Homorus*, *Drymornis* (*Dendrocolaptidæ*).] For important corrections, see *Phacelodorus* and *Furnarius cristatus*, n. sp. (*Dendrocolaptidæ*).

SCOTT, W. E. D. On the Avifauna of Pinal County, with remarks on some Birds of Pima and Gila Counties, Arizona. *Auk*, 1888, pp. 29-36 & 159-168. [Cf. *Zool. Rec.* xxiv, *Aves*, p. 30.]

A continuation of an interesting paper, with notes by J. A. Allen, which contains details of the nests and eggs, status of species, &c. [See *Troglodytes* (*Troglodytidæ*).]

——. Supplementary Notes from the Gulf Coast of Florida. *T. c.* pp. 183-188.

[Cf. *Zool. Rec.* xxiv, *Aves*, p. 30; and see *Cistothorus marianæ*, n. sp. (*Troglodytidæ*), *Buteo* (*Falconidæ*).]

——. A Summary of Observations on the Birds of the Gulf Coast of Florida. *T. c.* pp. 373-379.

Results of investigations extending from 1879 to 1888.

SEEBOHM, H. An Attempt to Diagnose the Suborders of the Great Gallino-Gralline Group of Birds by the aid of Osteological Characters alone. *Ibis*, 1888, pp. 415-435.

Though the osteological points upon which the author bases his conclusions are far too numerous and too complex to be reproduced here,

the following may be stated as the result obtained. We may separate, as a distinct order, the "Great Gallino-Gralline" group of Birds, and subdivide it into the following 10 suborders, under the two heads of Galline and Gralline, each suborder being related to the others according to its position :—(1) Galline : *Crypturi*, *Gallinæ*, *Pterocletes*, *Columbæ*. (2) Gralline : *Hemipodii*, *Grallæ*, *Tubinæres*, *Gavio-Limicolæ*, *Colymbo-Podicipes*, *Impennes*. Of these, again, the *Crypturi* are more nearly allied to the *Gallinæ* than to any other group; the *Columbæ* are very intimately connected with the *Pterocletes*; the *Hemipodii* approach the *Grallæ* and *Gaviæ* closely; the *Alcidæ* coincide in certain points with the latter, rather than with the *Colymbo-Podicipes*; while the *Grallæ* are considered to include the *Opiathocomidæ*, *Mesitidæ*, *Eurypygidæ*, *Gruidæ*, *Rhinocetidæ*, *Peophiidæ*, *Otididæ*, *Rallidæ*, and *Cariamidæ*, and are divided, after Garrod, into Schizorhinal and Holorhinal forms.

[SEEBOHM, H.] Further Notes on the Birds of the Loo-choo [Liu-Kiu] Islands. T. c. pp. 232-236. [Cf. Zool. Rec. xxiv, *Aves*, p. 30.]

The author corrects several of his own identifications. See also *Hypsipetes* (*Pycnonotidæ*), *Icoturus* (*Timeliidæ*), *Passer* (*Fringillidæ*), *Treron* (*Columbidæ*), for statements that 3 of Stejneger's new species and his new genus [Zool. Rec. xxiii, *Aves*, p. 38] will not hold good.

— On the Birds observed by Dr. Bunge on his recent Visit to Great Liakoff Island. T. c. pp. 344-351.

[Cf. Zool. Rec. xxiv, *Aves*, p. 29, *sub nom.* SCHRENCK; and see *Charadrius* (*Charadriidæ*), *Tringa* (*Scolopucidæ*), *Larus* (*Laridæ*).]

— [See also *Nucifraga* (*Corvidæ*), *Sitta* (*Sittidæ*), *Merula* (*Turdidæ*), *Phasianus* (*Phasianidæ*), *Ibis* (*Plataleidæ*), *Vanellus* (*Charadriidæ*).]

SEEMANN, W. Die Vögel der Stadt Osnabrück und ihrer Umgebung. JB. Ver. Osnabr. 1885-88, pp. 77-117.

A catalogue of species, with notes on their status, breeding, &c.

*SEIDEL, H. Natursänger. Leipzig : 1838, 8vo, 110 pls.

SENNETT, G. B. [See *Peucaea ruficeps scotti*, n. subsp., and genus (*Fringillidæ*), *Psaltiriparus lloydi*, n. sp., *Parus carolinensis agilis*, n. subsp. (*Paridæ*), *Nyctidromus albicollis merrilli*, n. subsp. (*Cuprimulgidæ*), *Rallus longirostris scotti*, n. subsp., *B. l. caribbæus* (*Rallidæ*).]

SÉRIZIAT, —. Études sur Tébessa et ses Environs. Ch. VII. Ornithologie. Catalogue des Oiseaux de Tébessa. Bull. Ac. Hippone, xxii [1888], pp. 247-268.

With short notes only.

SEVERZOFF, N. A. [THE LATE]. [See MENZBIER, M.]

SHARP, D. Zoological Bibliography of the Lesser Antilles, Caribbee Islands, or Windward and Leeward Islands, West Indies (Tobago to Porto-Rico inclusive). Rep. Brit. Ass. 1888, pp. 438-464.

This is an Appendix to the Report on the same subject, p. 3, *suprà*. [Also separate.]

SHARPE, R. B. Catalogue of the *Passeriformes*, or Perching Birds, in the Collection of the British Museum. *Fringilliformes*: Part III, containing the family *Fringillidæ*; vol. xii of the series. London: 1888, 8vo, 872 pp., 16 pls., cuts. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 34.]

The number of species (and examples of each) recorded in this volume (559) make it the bulkiest yet issued; and even this might be increased if others were included which possibly belong to different families. Great additions have been made to the series in the Museum, by the presentation of the Hume, Tweeddale, Salvin-Godman, and other collections; while a consignment from Emin Pasha provides material for a large part of the Appendix. An attempt is made to distinguish the sub-families *Coccothraustinae*, *Fringillinae*, and *Emberizinae*, by osteological characters alone; though the author considers such divisions quite artificial, and that these sub-families are connected by numerous intermediate forms. Keys are given to the genera and species. [See *Rhodospiza*, *Pseudochloris*, *Schistospiza*, *Rhodospingus*, n. gg., *Carpodacus rosepectus*, *Pyrrhospiza [punicea]* *humii*, *Zonotrichia [Hamophila]* *whitii*, *Porphyraspiza pulchra*, *Poospiza boliviana*, *Peucaea [ruficeps]*, *homochlamys*, *Pseudochloris mendocina*, *Geospiza difficilis*, *Guiraca [cyanea]* *argentina*, *Spermophila [plumbea]* *whitelyana*, *S. [p.] colombiana*, *S. [cucullata]* *polionota*, *S. albitorquis*, *S. [lineola]* *trinitatis*, *S. [l.] amazonica*, *Amaurospiza equatorialis*, *A. azillaris*, *Fringilla maderensis*, *Chrysomitris sclateri*, *C. stejnegeri*, *C. [icterica]* *boliviana*, *C. [i.] longirostris*, *Passer [domesticus]* *griseigularis*, *P. yatii*, *Sycalis [flavola]* *jamaica*, *S. taczanowskii*, *Phrygilus [caniceps]* *saturatus*, *Rhodospingus mentalis*, n. sp. & subsp., *Pyrrhula* and *Passer*; and for figures *Coccothraustes*, *Spermophila*, *Chrysomitris*, *Montifringilla*, *Passer*, *Polioptila*, *Serinus*, *Carpodacus*, *Emberiza*, *Paroaria*.]

— On a Collection of Birds from the Island of Palawan. *Ibis*, 1888, pp. 193–204, pls. iii & iv.

An important paper, containing an account of the Birds collected by J. Whitehead, who has added 60 species to the island's list. [See *Prioniturus cyaneiceps* (*Psittaci*), *Baza leucopias* (*Falconidæ*), *Syrnium whiteheadi*, pl., *Scops fuliginosa* (*Striges*), *Hyloterpe whiteheadi* (*Laniidæ*), *Siphia erithacus*, pl. (*Muscicapidæ*), *Iole striaticeps* (*Pycnonotidæ*), *Prionochilus johanne*, pl. (*Dicaeidae*), n. spp.]

— Further Descriptions of New Species of Birds discovered by Mr. John Whitehead on the Mountain of Kina Balu, North Borneo. *T. c.* pp. 383–396, pls. ix–xii. [*Cf.* Zool. Rec. xxiv, *Aves*, p. 32.]

Just as in the former paper on the above region, attention was drawn to the connection between its avifauna and that of the Himalayas, so in that now under our notice considerable affinity is shewn to exist with that of Ceylon. Besides new genera and species of great importance, several others are noted as new to Borneo. [See *Oreoclestes leucops*, pl. (*Pycnonotidæ*), *Alloctopus calvus*, *Androphilus accentor*, pl., *Chlorocharis emilii*, pl. (*Timeliidæ*), n. gg. & spp., *Cissa jefferyi* (*Corvidæ*), *Rhinomyias gularis* (*Muscicapidæ*), *Merula seebohmi* (*Turdidæ*), *Cettia oreophila* (*Sylviidæ*), *Brachypteryx erythrogyna*, pl., *Corythocichla crassa* (*Timeliidæ*),

Megalæma pulcherrima, pl. (*Capitonidæ*), *Harpactes whiteheadi*, pl. (*Trogonidæ*, n. spp., *Muscicapula* (*Muscicapidæ*), *Cryptolopha* (*Sylviidæ*), *Hierococcyx*, *Ouculus* (*Cuculidæ*), *Carpophaga* (*Columbidæ*).]

[SHARPE, R. B.] List of a Collection of Birds made by Mr. L. Wray in the Main Range of Mountains of the Malay Peninsula, Perak. P. Z. S. 1888, pp. 268-281, pl. xv. [Cf. Zool. Rec. xxiii, *Aves*, p. 36, and xxiv, *Aves*, p. 32.]

In conjunction with former papers on the same subject, this list makes an important addition to our knowledge of the range of various Himalayan and Sumatran species and those of Tenasserim, while assisting to determine the limits of the avifauna of the several districts. [See *Pericrocotus croceus*, *P. wrayi*, and gen. (*Campophagidæ*), *Muscicapula westermanni* (*Muscicapidæ*), *Cryptolopha davisoni* (*Sylviidæ*), *Gampsorhynchus saturator*, *Melanocichla peninsularis*, *Siva sordidior*, *Cutia cervinocrissa* (*Timeliidæ*), *Chrysophegma wrayi* (*Picidæ*), n. spp.]

— Descriptions of some New Species of Birds from the Island of Guadalcanar, in the Solomon Archipelago, discovered by Mr. C. M. Woodford. T. c. pp. 182-185.

[See *Astur holomelas*, *A. woodfordi*, *A. shebae* (*Falconidæ*), *Ninox granti* (*Striges*), *Graucalus holopolius*, *Edoliisoma erythropygium* (*Campophagidæ*), *Pomarea erythrostris* (*Muscicapidæ*), n. spp.; and cf. Zool. Rec. xxiv, *Aves*, p. 23.]

— Notes on Specimens in the Hume Collection of Birds. No. vi On some Species of the Genus *Digenea* [(*Muscicapidæ*) *D. leucops*, *D. malayana*, n. spp. (q.v.).] T. c. pp. 246 & 247. [Cf. Zool. Rec. xxiv, *Aves*, p. 32.]

— Birds in Nature. London: 1888, 4to, 78 pp., 39 pls., cuts.

— [See also GOULD, J. [the late], SCLATER, P. L.; *Poliopsis colletti*, n. g. & sp., *P. cambodianus*, *Sturnus menzbieri*, *S. porphyronotus* (*Sturnidæ*), *Geocichla aurata* (*Turdidæ*), *Orthnocichla whiteheadi* (*Troglodytidæ*), *Phyllergates cinereicollis*, *Garrulax schistochlamys*, *Turdinulus exul* (*Timeliidæ*), *Zosterops clara* (*Meliphagidæ*), *Dendrophila corallipes* (*Sittidæ*), *Rhectes meridionalis* and fam. (*Laniidæ*), *Accipiter buttkoferi* (*Falconidæ*), *Scops luciae* (*Striges*), n. spp., *Calypptomena*, pl. (*Eurylæmidæ*).]

—, & WYATT, C. W. A Monograph of the *Hirundinidæ*, or Family of Swallows. London: 1888, 4to, pts. vii & viii, pagin. discont., 12 pls. [Cf. Zool. Rec. xxiv, *Aves*, p. 33.]

For plates see the family. There is no letterpress given with *Hirundo smithii*, but the first of the promised maps to illustrate the distribution of each species is provided for 4 species of *Psaltidoprocne* (q.v.).

SHELLEY, G. E. On the Hornbills of the Ethiopian Region. Ibis, 1888, pp. 47-70.

The writer recognizes 5 genera, to which and to the species included he gives keys. The types of the former are stated, as well as the repositories of the specimens. [See *Lophoceros damarensis*, n. sp., *Buceros* (*Bucerotidæ*).]

[SHELLEY, G. E.] List of Birds collected in Eastern Africa by Mr. Frederick J. Jackson, F.Z.S. With Notes and an Introduction by the Collector. T. c. pp. 287-307, pls. vi & vii.

The localities visited were Lamu, Merereni, Tangani, Jipi, Mashundwani, Manda Island (all within 300 miles of Zanzibar, to the north), and Kilima-njaro. The last named was approached by a new route, *via* Vanga; the 99 species from that district are placed in a separate list, while of 31 from the former region 4 only are common to the latter. [See *Ploceus jacksoni*, n. sp., *Phileterus*, pls. (*Ploceidæ*), *Ginnyris* (*Nectariniidæ*), *Telephonus* (*Laniidæ*).]

—. On a Collection of Birds made by Emin Pasha in Equatorial Africa. P. Z. S. 1888, pp. 17-50, pl. iii.

The collection here described is composed of two parts, one being from the Wadelai district, the other from Tingasi and the Monbuttu country. Its especial importance lies in the fact that the species in the former portion are almost entirely N.E. African in character, while those in the latter are perfectly W. African; whereby the limits of the two regions are well demonstrated. There are many interesting notes, and the present consignment adds many desiderata to the cabinets of the British Museum, and includes the types of the following species:—*Indicator emini* (*Indicatoridæ*), pl., *Spermospiza ruficapilla*, *Ploceus castanops*, n. spp., *Lagonosticta*, *Habropyga* (*Ploceidæ*), *Glareola emini*, n. sp. (*Charadriidæ*), *Salpornis* (*Certhiidæ*).

SHUFFELDT, R. W. Contributions to the Comparative Osteology of Arctic and Sub-Arctic Water Birds. Pt. 1. J. Anat. Phys. xxiii, pp. 1-39, pls. i-v.

The author takes as a subject for consideration the skeleton of *Alca torda*, summing up, in conclusion, its principal osteological characters. Throughout, comparisons are made with other Birds; and supplementary notes are added on the skeleton of the Great Auk, with reference to two specimens exhumed by F. A. Lucas, in 1887. Some of the plates do not refer to the present portion of the work, while others are given before their places.

—. Observations upon the Osteology of the Orders *Tubinares* and *Steganopodes*. P. U. S. Nat. Mus. 1888, pp. 253-315, 43 cuts.

A still longer paper of the same description as the last, with illustrations of skeletons, whole or in part. It comprises in the first division (*Tubinares*): (1) skeleton of *Oceanodroma furcata*, with a brief summary of its osteological characters; (2) skeleton of *Fulmarus glacialis rogersi*; (3) points wherein the osteology of these two differ; (4) notes upon a supposed skull of *Puffinus tenuirostris*, &c.; (5) observations upon the osteology of *Diomedea albatrus*. In the second division (*Steganopodes*) are included: (1) osteology of *Sula bassana*; (2) the remainder of the skeleton of the trunk in the same; (3) of the appendicular skeleton; (4) notes upon the skeleton of *Phalacrocorax urile*; (5) observations upon a skull of *Pelecanus fuscus*.

- °[SHUFELDT, R. W.] Audubonian Sketches. 1 & II. Audubon Mag. i, pp. 268-271; ii, pp. 1-6.
- . For important papers on anatomy, see *Fringillidæ*, *Icteridæ*, *Picidæ*, *Anseres*, *Phasianidæ*, *Rallidæ*, *Charadriidæ*, *Scolopacidæ*.
- . [See also *Lunda* (*Alcidæ*), *Corvus* (*Corvidæ*) [anat.], and STEJNEGER, L.]
- SIBLEY, W. K. Tuberculosis in Fowls. Tr. Pathol. Soc. Lond. 1888, 8 pp., pl. xxxix, 2 cuts.
- SIMPSON, A. N. The Ornithology of Arbroath. Scot. Nat. 1888, pp. 289-296 & 337-344.
- [See *Saxicola* (*Turdidæ*).]
- SIMROTH, H. Zur Kenntniss der Azorenfauna. Arch. f. Nat. 1888, pp. 179-234, pls. xiv & xv.
- Aves*, pp. 184-201, with comparative tables of distribution.
- SMITH, CECIL. Additions to the List of Somersetshire Birds [since 1869]. Zool. 1888, pp. 174-176. [See MATHEW, M. A.]
- . [See also *Anser* (*Anatidæ*).]
- SMITH, H. M., & PALMER, W. Additions to the Avifauna of Washington and Vicinity. Auk, 1888, pp. 147 & 148.
- [See *Dendraca*, *Siurus* (*Mniotiltidæ*), and RICHMOND, C. W.]
- SOUZA, J. A. DE. Enumeração das *Aves* conhecidas da ilha de S. Thomé seguida da lista das que existem d'esta ilha no Museu de Lisboa. J. Sci. Lisb. 1888 [xlvii], pp. 151-159.
- [See *Estrela thomensis*, n. sp. (*Ploceidæ*), and cf. Zool. Rec. xxiv, *Aves*, p. 5.]
- . *Aves* de Angola da Exploração do Sr. José d'Anchieta. Op. cit. [xlviii], pp. 216-228. [Cf. Zool. Rec. xxiv, *Aves*, p. 35.]
- 49 species, sent from Quindumbo with the collector's notes.
- . [See also *Monticola angolensis*, n. sp. (*Turdidæ*).]
- SOUTHWELL, T. [See *Syrnhaptes* (*Pteroclidæ*).]
- STAMATI, G. Sur la présence d'une enveloppe adventice autour des excréments des oiseaux. Bull. Soc. Z. Fr. 1888 [xiii], pp. 187 & 188.
- What was before known for Batrachians is now proved for Birds.
- STEELE, J. B. Observations made in the Central Philippines. Am. Nat. 1888, pp. 622-626 & 779-784.
- Nests of the edible Swift, &c.
- STEJNEGER, L. Further Contributions to the Hawaiian Avifauna. P. U. S. Nat. Mus. 1888, pp. 93-103. [Cf. Zool. Rec. xxiv, *Aves*, p. 35.]
- Notes on a fresh collection (Water Birds) from V. Knudsen, chiefly from Kauai and Niihau, with native names, &c. [See *Thyellodroma* n. g., *Puffinus knudseni*, n. sp. [?] (*Procellariidæ*), *Anous* (*Laridæ*), *Dafila*, *Anas* (*Anatidæ*).]

[STEJNEGER, L.] Review of Japanese Birds. VII. The Creepers [*Certhia familiaris* and *C. f. scandulaca*]. VIII. The Nutoracker. *Op. cit.* 1887, pp. 606-611; 1888, pp. 425-432. [*Cf.* Zool. Rec. xxiv, *Aves*, p. 35.]

In the latter paper, the author differs from H. Seebohm [*suprà*] in considering that the forms of this Bird cannot be called "arctic" and "temperate." He agrees in recognising two subspecies, but wishes to use Brehm's specific names for them. The Japanese Bird he finds to be the slender-billed *N. macrorhynchus*.

— [A reply to R. W. Shufeldt concerning the "dermo-tensor patagii" muscle; *cf.* Zool. Rec. xxiv, *Aves*, p. 33.] *Auk*, 1888, pp. 120-123.

— [See also *Parus colletti*, n. subsp. and genus, (*Paridæ*), *Picoides* (*Picidæ*), *Euryzona* (*Rallidæ*).]

STEVENSON, H. [THE LATE]. [See *Scolopax* (*Scolopacidæ*).]

STORM, V. Ornithologiske Notitser. *Nor. Selsk. Skr* 1886-87, pp. 52-57.

Emberiza miliaria, *Nucifraga caryocatactes*, *Tetrao urogallus*, *Anser brachyrhynchus*, *Vulpanser rutilus*, *Colymbus adamsi*.

SUNDMAN, G. Finska Fogel-ägg. Tecknade af Gösta Sundman. (Eggs of Finnish Birds, drawn and coloured by G. S.) Helsingfors: 1888, oblong 4to, pts. viii & ix.

Alaudidæ, *Ampelidæ*, *Corvidæ*, *Fringillidæ*, *Oriolidæ*, *Sturnidæ*, *Cypselidæ*, *Caprimulgidæ*, *Coraciidæ*, *Cuculidæ*. The native names are given with the eggs, but there is still no text. [*Cf.* Zool. Rec. xxiii, *Aves*, p. 39.]

SUNDSTRÖM, C. R. Mittheilungen des Ornithologischen Komitees der Königlichen Schwedischen Akademie der Wissenschaften. I. Bih. Sv. Ak. Handl. xiii, No. 3, 181 pp.

Contains a list of Swedish Birds, with German and Latin names, in addition to observations at various stations.

SUTTON, J. B. Rickets in Monkeys, Lions, Bears, and Birds. *J. Comp. Med.* 1888, pp. 1-29, 29 cuts.

A skeleton of a rickety (?) Fowl is figured and described.

SWIERSTRA, K. N. Systematische naamlijst van gewervelde Dieren: voor de Diergaarde levend ingekomen van 1 Mei, 1838, tot 30 April, 1888. *Bijdr. Dierk.* (Fees-nummer) 1888, No. 3. *Aves*, pp. 30-90.

SWINBURNE, J. An Ornithological Visit to the Ascib Islands, Loch Snizort, Skye. *P. Phys. Soc. Edinb.* 1887-88, pp. 402-407.

Notes on a colony of *Procellaria pelagica* and others of *Uria grylle*.

TACZANOWSKI, L. Liste des Oiseaux observés depuis cinquante ans dans le Royaume de Pologne. *Ornis*, 1888, pp. 441-516.

The species number 303, on which good notes are given, as might be expected from the author's reputation. Still, it is unfortunate he should have used *Thriponax* for the generic name of the Rook, when he had himself adopted it for a species of *Picus* in 1887; *cf.* Zool. Rec. xxiv, *Aves*, p. 59. [See *Syrhaptes* (*Pteroclidæ*), *Gallinago* (*Scolopacidæ*).]

[TACZANOWSKI, L.] Liste supplémentaire des Oiseaux recueillis en Corée par M. Jean Kalinowski. P. Z. S. 1888, pp. 450-469, 2 cuts. [Cf. Zool. Rec. xxiv, *Aves*, p. 37.]

This list is the outcome of a collection made between the middle of March 1887, and the end of January, 1888, and includes Birds from the country to the south of Séoul, as well as others met with on the return journey to Russian Manchuria. The southern district was still poorer in vegetation and game than that near the capital; nevertheless 42 species in all are added to the former lists, while tables of Birds noticed, but not obtained, are added. [See *Haliaëtus branickii*, n. sp. (*Falconidæ*), *Otis* (*Otididæ*), *Halcyon* (*Alcedinidæ*).]

— [See also *Emberiza jankowskii*, n. sp. (*Fringillidæ*), pl.]

TACZANOWSKI, W. Spis ptaków Królestwa Polokiego, obserwowanych w ciągu orlanych lat pięćdziesięciu. Pam. Fizjogr. viii [1888], pp. 331-376.

TALSKÝ, J. Die ornithologische Sammlung des Landesmuseums in Klagenfurt. MT. orn. Ver. Wien, 1888, pp. 6 & 7.

List of species found there.

— Die ornithologische Sammlung des steiermärkischen landschaftlichen Joanneums in Gratz. T. c. pp. 64 & 65.

— Reiseerinnerung aus Steiermark und Kärnten. T. c. pp. 77, 78, & 100-106.

TEGETMEIER, W. B. [See *Syrnhaptes* (*Pteroclidæ*).]

THOMPSON, C. H. Indian Hawks and Hawking. Ess. Nat. 1888, pp. 217-221.

*THURBER, E. C. A List of Birds of Morris County, New Jersey. True Democratic Banner [Newspaper]. Morristown, N.J.: Nov. 10, 17, 24, 1887.

TOUPET, —. [See CORNIL, —.]

TRAIL, J. W. H. [See *Turdus* (*Turdidæ*).]

TREACHER, W. H. [See *Lobiophasis* (*Phasianidæ*).]

TRISTRAM, H. B. The Polar Origin of Life, considered in its bearing on the Distribution and Migration of Birds. Part II. Ibis, 1888, pp. 204-216. [Cf. Zool. Rec. xxiv, *Aves*, p. 38.]

The author having stated his views on the general principles of migration and distribution under five heads, takes for instances the families *Trochilidæ*, *Turdidæ*, and *Hirundinidæ*, and deduces (1) that the present tropical species are those which migrated first from the Poles, before differentiation (and consequent power to withstand the climate) began; (2) that, notwithstanding, we find individual cases of hereditary disposition to return northwards—generally for the purpose of breeding—even in these early migrants; (3) that the later departures, being partially differentiated, took up their abodes wherever they found the climate suitable, but preserved the same tendency to return northwards to a still greater degree, if we except species which alter their range vertically instead; (4) that very little, if any, evidence exists of a South-Polar

[WASHINGTON, S. V.] [See also *Pelecanus* (*Pelecanidae*).]

WATSON, J. The Ornithology of Skiddaw, Sca Fell, and Helvellyn. *Naturalist*, 1888, pp. 161-169.

—. Notes on the Birds of the Lake District. *T. c.* pp. 201 & 202.

WAYNE, A. T. [See *Ionornis* (*Ballidae*).]

WHITE, W. T. [See *Xenorhynchus* (*Oiconiidae*).]

WHITEHEAD, J. Notes on some Oriental Birds. *Ibis*, 1888, pp. 409-413.

[See *Eudynamis* (*Oculidae*), *Megapodius* (*Megapodiidae*), *Plotus* (*Plotidae*).]

WILLIAMS, R. S. Upper Missouri River Birds. *Auk*, 1888, pp. 14-18.

An account of an ornithological ramble on May 9th.

WILSON, S. B. [See *Ohloridops kona*, n. g. & sp. (*Fringillidae*).]

WINGE, O. IV. Report on Birds in Denmark, 1886. *Ornis*, 1888, pp. 369-440, pl. i (map). [*Of. Zool. Rec.* xxiv, *Aves*, p. 39.]

After the list of Lights and their keepers comes a general report, which includes—as last year—many notes on the breeding of Birds. Notes from the Lights conclude the paper, with the exception of a few “errata” for 1884-85. [See *Querquedula* (*Anatidae*).]

*WINK, F. Deutschlands Vögel. Naturgeschichte sämtlicher Vögel der Heimat, nebst Anweisungen über die Pflege gefangener Vögel. Pt. I. Stuttgart: 1888, sm. 4to.

WITHINGTON, F. On the Birds of Lomas de Zamora, Buenos Aires, Argentine Republic. With notes by P. L. SCLATER. *Ibis*, 1888, pp. 461-473.

A list of 92 species, determined by Sclater, with accounts of the breeding and the eggs of many of them. A short description of the country is prefixed. [See *Phacellodomus* (*Dendrocolaptidae*).]

WOODFORD, C. M. General Remarks on the Zoology of the Solomon Islands, and Notes on Brenchley's Megapode. *P. Z. S.* 1888, pp. 248-250.

WRATHALL, F. A. Birds of the Ayton [Yorksh.] District. *Nat. Hist. J.* 1888, pp. 1-5.

WRAY, L. [See SHARPE, R. B.]

WYATT, C. W. [See SHARPE, R. B.]

YOUNG, C. G. [See *Opisthocomus*, pl. (*Opisthocomidae*).]

ZANDER, R. [See *Rhea* (*Rheidae*).]

ZARUDNOI, N. Dopolnitel'nye zametki ke poznaniyu ornitologicheskoi fauni Orenburgskago Kraja. [Supplementary observations on our knowledge of the ornithological fauna of the Orenburg District.] *Bull. Mosc.* 1888, pp. 653-681. [*Cf. Zool. Rec.* xliii, *Aves*, p. 42.]

This paper will be very useful to determine the meeting points of the Asiatic and the European avifauna. [See *Syrhaptes* (*Pteroclididae*), *Hypolais icterina mollesoni*, n. subsp. (*Sylviidae*).]

ZELEDÓN, J. C. Catálogo de las *Aves* de Costa Rica ; con indicacion de las especies, localidades y número de ejemplares contenidos en la coleccion del Museo Nacional. An. Mus. Costa Rica, i [1887, pub. 1888], pp. 103-134.

708 species are recognized, as against 692 in the list of Costa-Rican Birds in the U.S. National Museum. [*Cf.* Zool. Rec. xxii, *Aves*, p. 34.] [*See* *Aramides plumbeicollis*, n. sp. (*Rallidae*).]

CARINATÆ.

PASSERES.

ACROMYODI.

OSCINES.

ALAUDIDÆ.

Fossil remains (new species) ; see PORTIS, A.

The family may be termed *Corydomorphæ* ; E. COUES, Auk, 1888, p. 207.

Alæmon margaritæ [♂ ♀], n. sp., near *A. duponti*, Gabes, Tunis ; A. KOENIG, J. f. O. 1888, pp. 228-232, pl. ii, figs. 1 & 2.

AMPELIDÆ.

The family, *sub voce* "Waxwing" ; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiv.

Ampelis garrulus, notes on its occurrence in the Department of the Somme, &c. ; L. MAGAUD D'AUBUSSON, Bull. Soc. Acclim. 1888, pp. 945-949, cuts : figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. vi.

CAMPOPHAGIDÆ.

Campophaga leucomelana, its nidification ; R. D. FITZGERALD, JUNR., P. Linn. Soc. N.S.W. ii, p. 971.

Edoliisoma erythropygium [♂ ♀], *Graucalus holopolius* [♀], n. spp., Guadalcanar, Solomon Archipelago ; R. B. SHARPE, P. Z. S. 1888, pp. 184 & 185.

Pericrocotus croceus [♀], n. sp., Gunong Batu Patch, Perak ; *P. wrayi* [♂ ♀], n. sp. (figured), Batang Padang Mts., Perak ; *P. rubrolimbatus*, *P. pulcherrimus* [*cf.* Zool. Rec. xxiv, *Aves*, p. 43], = *P. solaris* and *P. neglectus* respectively : *id. t. c.* p. 269.

CERTHIIDÆ.

The family, *sub voce* "Tree-Creeper" ; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiii : see also STEJNEGER, L.

1888. [VOL. XXV.]

c 8

Certhia mexicana albescens, n. subsp., Ciudad Durango, N.W. Mexico ; H. v. BERLEPSCH, Auk, 1888, p. 450.

Salpornis emini [cf. Zool. Rec. xxi, *Aves*, p. 39] = *S. salvadorii* ; G. E. SHELLEY, P. Z. S. 1888, p. 37.

CINCLIDÆ.

Cinclus schulsi figured ; P. L. SCLATER & W. H. HUDSON, Argent. Orn. i, p. 11, pl. ii.

CORVIDÆ.

TSCHUSI ZU SCHMIDHOFFEN, V. v. Die Verbreitung und der Zug des Tannenhebers (*Nucifraga caryocatactes*, L.), mit besonderer Berücksichtigung seines Auftretens im Herbst und Winter 1885 und Bemerkungen über seine beiden Varietäten : *Nuc. car. pachyrhynchus* und *leptorhynchus*, R. Blas. Verh. z.-b. Wien, 1888, pp. 407-506, pl. xi [beaks].

Corvidæ, winter roosting ; C. L. EDWARDS, Am. J. Psychol. 1888, pp. 436-459 [and Zool. 1888, pp. 292-297, 334-345].

Cissa jefferyi, n. sp. [♂ ♀], Kina Balu Mt., N. Borneo ; R. B. SHARPE [J. Whitehead], Ibis, 1888, pp. 383 & 384.

Corvus corax sinuatus, a firm osseous plate round the entrance of the optic nerve ; R. W. SHUFELDT, Auk, 1888, p. 329.

Nucifraga caryocatactes, the Arctic form discussed ; H. SEEBOHM, Ibis, 1888, pp. 236-241. [See STEJNEGER, L., and cf. Zool. Rec. xxiv, *Aves*, pp. 43 & 44.]

Perisoreus canadensis fumifrons figured ; E. W. NELSON, Rep. Nat. Hist. Alaska, p. 164, pl. xi.

DICEIDÆ.

Prionochilus plateni, n. sp. [♂], Paláwan I. ; W. BLASIUS, Braunschw. Anz. 1888, No. 37 (Feb. 12th), p. 335, and Orn. 1888, p. 313. *P. johannæ*, n. sp. [♂], near *P. xanthopygius*, Paláwan I. ; R. B. SHARPE, Ibis, 1888, pp. 201 & 202, pl. iv, fig. 1. W. BLASIUS says they are the same, and claims priority ; Ibis, 1888, p. 372.

FRINGILLIDÆ.

The family generally, see SHARPE, R. B.

SHUFELDT, R. W. The Osteology of *Habia melanocephala*, with comparative Notes upon the Skeletons of certain other Conirostral Birds, and of Tanagers. Auk, 1888, pp. 438-444, cut.

Skulls and sterna of the above species and of *Pipilo m. megalonyx* are compared with each other and with those of Tanagers, with a view to determine their relationships generally.

Acanthidops bairdi, ♂ ad. described; R. RIDGWAY, P. U. S. Nat. Mus. 1888, p. 196.

Ammaurospiza aquatorialis [♂ ♀], Ecuador, *A. azillaris* [♂], Brazil, n. spp.; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 157 & 158.

Ammodramus australis, n. sp., Bahamas and Florida; C. J. MAYNARD, Am. Exch. and Mart and Household Jour., Feb. 5th, 1887, p. 69 [cf. Zool. Rec. xxiv, *Aves*, p. 20, and Auk, 1888, p. 398]. *A. maritimus peninsulae*, S.W. Florida and Louisiana, *A. m. sennetti*, Corpus Christi, Texas, n. subsp.; J. A. ALLEN, Auk, 1888, pp. 284-287 & 426. *A. sandwichensis brunneus*, n. subsp., Valley of Mexico; A. W. BUTLER, t. c. pp. 264-266.

Buserinus, see *Phaeospiza*, *infra*.

Calcarius nivalis figured; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xliii.

Cardinalis virginianus [♂ ♀], figured; E. BARTLETT, Monogr. Weaver-Birds and Finches, pt. ii. *C. v. saturatus*, *C. v. coccineus*, *C. v. yucatanicus* [cf. Zool. Rec. xxii, *Aves*, p. 38, xxiv, *Aves*, p. 45], are doubtful subspecies; O. SALVIN, Ibis, 1888, p. 260.

Carpodacus roseuspectus [♂ ♀], n. sp., S. Mexico; R. B. SHARPE, Cat. Birds Brit. Mus. xii, p. 424. *C. ambiguus* figured; *id.* t. c. pp. 428 & 429, pl. x.

Chloridops kona [♀], n. g. & sp., Kona, I. of Hawaii; S. B. WILSON P. Z. S. 1888, p. 218.

Chrysomitris sclateri [♂ ♀], n. sp. [= *C. icterica* pt.], Ecuador; *C. stejnegeri* [♂ ♀], n. sp., [= *C. xanthogastra*, Sol. & Salv.], Bolivia; *C. [icterica] boliviana*, Bolivia, *C. [i.] longirostris*, Guiana, n. subsp.; *C. tibetana* figured; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 200, 210, 220-221, 226-227, pl. iii. *C. atrata* [♂ ♀], *C. europygialis* [♂ ♀] figured; E. BARTLETT, Monogr. Weaver-Birds and Finches, pts. i & ii.

Coccothraustes humii figured; R. B. SHARPE, Cat. Birds Brit. Mus. xii, p. 40, pl. i. *C. vespertina*, its nest and eggs, from Arizona; J. SWINBURNE, Auk, 1888, pp. 113 & 114: from Yolo co., California; W. E. BRYANT, Bull. Cal. Ac. Sci. ii [1887], pp. 449 & 450.

Emberiza jankowskii, n. sp., Sidemi, Ussuria; L. TACZANOWSKI, Ibis, 1888, pp. 317-319, pl. viii. *E. godlewskii* figured; R. B. SHARPE, Cat. Birds Brit. Mus. xii, p. 542, pl. xii. *E. leucocephala* figured; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xxxix. *E. melanocephala*, *E. citrinella*, *E. cirrus*, *E. rustica* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. vi. *E. rustica*, its breeding habits in E. Siberia; F. DÖRRIES, J. f. O. 1888, p. 84.

Euthetia canora, of Cuba, in Florida; C. H. MERRIAM, Auk, 1888, p. 322.

Fringilla maderensis, n. sp. [with subsp. *F. moreleti* and *F. canariensis*], Madeira; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 175 & 176. *F. caelebs* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. viii. *F. montifringilla* figured; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xli.

Fringillaria polypleura [♂], n. sp., Soddé, Shoa; T. SALVADORI,

Ann. Mus. Genov. xxvi, pp. 269-271. [Notes on allied species are added.]

Geospiza difficilis [♂ ♀], n. sp. [= *G. fortis*, auct. pt.], Abingdon and Charles Is., Galapagos Is.; R. B. SHARPE, Cat. Birds Brit. Mus. xii, p. 12.

Guiraca [cyanea] argentina, n. subsp., Argentine Rep.; *id. t. c.* p. 73.

Habia, [see beginning of family].

Hæmophila meleodi, n. sp. [♂ ♀], near *H. rufescens*, El Carmen, Mexico; *H. cahooni*, n. sp. [♂ ♀], Mts. near Oposura, Sonora, Mexico; W. BREWSTER, Auk, 1888, pp. 93 & 94.

Linota cannabina figured; LORD LILFORD, Col. Fig. Br. Birds, pt. vii.

Loxia curvirostra in the Hebrides; H. A. MACPHERSON, Zool. 1888, pp. 348 & 349: in Heligoland and at the Spurn in July; J. CORDRAUX, Naturalist, 1888, p. 224: at Holderness in July; W. E. CLARKE, *ibid.*: at Yarmouth in July; J. H. GURNEY, JUNR., *t. c.* p. 330: figured, with *L. pityopsittacus*; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pts. xxxviii-xl. *L. c. minor*, notes on its habits; W. H. FISHER, J. Cincinnati Soc. x, pp. 203 & 204.

Montifringilla nivalis figured; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xliii. *M. blanfordi* figured; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 264 & 265, pl. iv.

Paroaria, heads of all spp. figured; *id. t. c.* pl. xvi. *P. cucullata* [♂ and juv.] figured; E. BARTLETT, Monogr. Weaver-Birds and Finches, pt. i.

Passer yatii [♂] n. sp., W. Afghanistan; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 322 & 323. *P. [domesticus] griseigularis*, n. subsp., Candahar; *id. t. c.* p. 313. *P. saturatus* [cf. Zool. Rec. xxii, *Aves*, p. 38], = *P. montanus*, juv.; *id. t. c.* pp. 825 & 826; H. SEEBOHM, Ibis, 1888, p. 235. *P. pyrrhonorhynchus* figured; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 316 & 317, pl. v. *P. domesticus*, *P. montanus* figured; LORD LILFORD, Col. Fig. Br. Birds, pts. vi & ix: the former [♂ ♀] figured; E. BARTLETT, Monogr. Weaver-Birds and Finches, pt. ii.

Peucaea, gen.; *P. ruficeps eremaca* cancelled; *P. r. scotti*, n. subsp., Arizona, New Mexico?, W. Texas?; G. B. SENNETT, Auk, 1888, pp. 40-42 & 401. *P. [ruficeps] homochlamys* n. subsp. [= *P. r. boucardi* pt.], S. New Mexico and Arizona; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 713 & 714. The two subspp. said to be identical, the former having precedence; Ed. Nature, xxxvii, p. 351. *P. cestivalis bachmani*, its nest and eggs, curious account of nesting habits; C. E. BENDIRE, Auk, 1888, pp. 351-356.

Phæospiza thomensis [wrongly supposed to be n. g. & sp.], I. of St. Thomas, W. Africa [= *Buserinus rufilatus*, Hartl., = *Poliospiza rufibrunnea*, *infra*]; J. v. BARBOZA DU BOCAGE, J. Sci. Lisb. 1888 [xlvi], pp. 148 & 149, cf. p. 192.

Phrygilus [caniceps] saturatus, n. subsp. [called *P. bolivianus* in Syst. Index], Bolivia; R. B. SHARPE, Cat. Birds Brit. Mus. xii, p. 785.

Poæceetes gramineus affinis, n. subsp., Salem, Oregon; G. S. MILLER, JUNR., Auk, 1888, pp. 404 & 405.

Poliospiza rufibrunnea figured; R. B. SHARPE, Cat. Birds Brit. Mus. xii,

p. 346, pl. vi. *P. tristriatus*, curious specimen from Shoa [*P. isabellina*, if distinct]; E. H. GIGLIOLI, Ann. Mus. Genov. xxvi, pp. 33 & 34 [cf. T. SALVADORI, t. c. p. 188].

Poospiza boliviana, n. sp., Bolivia; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 634 & 635, pl. xiv.

Porphyrospiza pulchra [♂], n. sp., Brazil; id. t. c. p. 625.

Pseudochloris, n. g. [type, *Sycalis pratensis*]; *P. mendozae* [♂], n. sp., Mendoza, Argentine Rep.; id. t. c. pp. 774 & 778.

Pyrgilauda, in Zool. Rec. xxi, Aves, p. 47, xxiii, Aves, p. 44, & xxiv, Aves, p. 43, should be transferred from *Alaudidae* to *Fringillide*.

Pyrrhospiza [*punicea*] *humii*, n. subsp., interior of N.W. Himalayas; R. B. SHARPE, Cat. Birds Brit. Mus. xii, p. 433.

Pyrrhula kurilensis [cf. Zool. Rec. xxiii, Aves, p. 46] should be a subspecies of *P. griseiventris*; id. t. c. p. 450, pl. xi. *P. nipalensis* [♂ ♀] figured; E. BARTLETT, Monogr. Weaver-Birds and Finches, pt. i. *P. vulgaris* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. viii.

Rhodospingus, n. g. [type (figured) *Coryphospingus cruentus*], *R. mentalis* [♂], n. sp., Puna I., Gulf of Guayaquil; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 808 & 809, pl. xv, figs. 1 & 2.

Rhodospiza, n. g. [for *Erythropsiza obsoleta*]; id. t. c. p. 282.

Saltatricula multicolor figured; P. L. SCLATER & W. H. HUDSON, Argent. Orn. i, p. 61, pl. v.

Schistospiza, n. g. [for *Coryphospingus griseocristatus*]; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 806 & 807.

Serinus [*Crithagra*] *burtoni*, *S.* [*C.*] *crocopygia*, *S.* [*C.*] *leucoptera*, figured; id. t. c. pp. 364-365, 360-361, & 361-362, pls. vii-ix. *S. flavigula* [♀], n. sp., Ambokarra and Malca-ghebdu, Shoa; *S. reichenowi* [♂ ♀], n. sp., Cialalakà, Shoa; T. SALVADORI, Ann. Mus. Genov. xxvi, pp. 272 & 273. *S. hortulanus* said to have been taken at Great Yarmouth; J. H. GURNEY, JUNR., Zool. 1888, p. 84.

Spermophila [*plumbea*] *whitelyana*, Guiana, *S.* [*p.*] *columbiana*, U. S. Colombia, *S.* [*cucullata*] *polionota*, Brazil, n. subsp., *S. albitorquis* [♂], n. sp., Mexico, *S.* [*lineola*] *trinitatis*, Trinidad, St. Vincent, S. America, *S.* [*l.*] *amazonica*, Amazon district, n. subsp.; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 98, 99, 118, 120, & 133. *S. palustris* figured; id. t. c. pp. 112 & 113, pl. ii. *S. parva*, Lawr., is identical with *Spermophila moreleti* (Bonap.); id. t. c. p. 124.

Spizella arenacea, its breeding plumage, with evidence of its specific distinctness; C. H. MERRIAM, Auk, 1888, p. 402.

Sycalis [*flaveola*] *jamaicae*, n. subsp. [*S. brasiliensis*, Scl.], Jamaica; *S. taczanowskii* [♂], n. sp., S. Peru and Ecuador; R. B. SHARPE, Cat. Birds Brit. Mus. xii, pp. 379 & 385.

Zonotrichia whitii [♂], n. sp. [= *Z. strigiceps*, White], Argentine Rep.; id. t. c. pp. 608 & 609, pl. xiii.

HIRUNDINIDÆ.

Nesting of Indian species; H. E. BARNES, J. Bomb. N. H. Soc. iii, pp. 43-48.

Psalidoprocne petiti, *P. albiceps*, *P. fuliginosa*, *P. nitens*, *Chelidon lagopus*, *Hirundo sclateri*, *H. smithii*, *Atticora melanoleuca*, *A. picata*, *Petrochelidon swainsoni*, *P. fluvicola*, *Stelgidopteryx ruficollis* figured; R. B. SHARPE & C. W. WYATT, Monogr. Hirund. pts. vii & viii.

Psalidoprocne antinorii, *P. pristoptera*, *P. nitens*, *P. holomelana*, map of distribution; iid. *ibid.*

Chelidon cashmiriensis figured; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xlii.

Cotile rupestris, *C. obsoleta* figured; iid. *ibid.*

Hirundo erythrogaster × *Petrochelidon swainsoni*, new hybrid from Cozumel I., Yucatan; O. SALVIN, Ibis, 1888, p. 256. *H. rustica*, vast flocks in Ceylon; S. BLIGH, t. c. p. 316.

ICTERIDÆ.

SHUFELDT, R. W. On the Skeleton in the Genus *Sturnella*, with osteological notes upon other North American *Icteridæ* and the *Corvidæ*. J. Anat. Phys. xxii, pp. 309-350, pls. xiv & xv.

The representative of the *Icteridæ* selected is *Sturnella magna neglecta*, and the different sections treat of its skull, of the rest of its axial skeleton, of its sternum and shoulder girdle, of the pectoral limb, and of the pelvic limb. In all of these respects the species chosen is compared with other members of the same family and with several of the *Corvidæ*. The conclusions drawn are: (1) that *Sturnella* represents a genus which undoubtedly belongs to the *Icteridæ*; (2) that in its own family its nearest relation is *Xanthocephalus*, and that it is furthest removed from *Icterus spurius*, &c.; (3) that outside of its own family it comes nearest to *Cyanocephalus*, and possibly is not far from *Picicorvus*; (4) that *Icterus* is nearest to *Agelaius*, and tends finchwards; (5) that *Molothrus* is a genus of Finches and is akin to *Scolecophagus* among the *Icteridæ*; (6) that the *Corvidæ* are properly divided into *Corvinæ* and *Garrulinæ*, but *Pica* is not *Garruline*; (7) that *Cyanocephalus* lies exactly between the two sub-families. Pl. xiv is skull and mandible of *Sturnella*; pl. xv is skull and pelvis of *Icteridæ* and *Corvidæ*.

Agelaius, see FISHER, A. K. (food).

Gymnostinops montezumæ, notes on breeding, &c.; N. S. GOSS, Auk, 1888, pp. 27-29.

Icterus gularis yucatanensis, n. subsp., Yucatan; H. V. BERLEPSCH, t. c. pp. 454-456. *I. wagleri castaneopectus*, n. subsp. [♂], Mts. of Sonora and Chihuahua, Mexico; W. BREWSTER, t. c. pp. 91 & 92.

Molothrus badius ad., *M. rufoarillaris*, pull., figured; P. L. SCLATER & W. H. HUDSON, Argent. Orn. i, pp. 86-97, pl. vi.

Sturnella magna inexpectata, n. subsp., Segovia R., Honduras; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 587 & 588.

Xanthocephalus, see FISHER, A. K. (food).

LANIIDÆ.

Colluricincla sibilis, n. sp., near *C. rufiventris*, Herbert Vale, N. Queensland; C. W. DE VIS, P. R. Soc. Queensl. v [1888], pp. 161 & 162.

Hyloterpe plateni, n. sp. [♂], Paláwan I.; W. BLASIUS, Braunsch. Anz. 1888, No. 52 (Mar. 1), p. 467, and Ornith., 1888, pp. 311 & 312. *H. whiteheadi*, n. sp. [♀], near *H. grisola*, Paláwan I.; R. B. SHARPE, Ibis, 1888, pp. 198-199. W. BLASIUS says these are the same, and claims priority; t. c. p. 372.

Lanius raddii, n. sp., Kulkulais, Transcaspian district; H. E. DRESSER [G. Radde], P. Z. S. 1888, p. 291. *L. algeriensis* is the species in Tenebriffe, as predicted by Dresser & Sharpe; S. G. REID, Ibis, 1888, p. 75. *L. excubitor* figured; LORD LILFORD, Col. Fig. Br. Birds, pl. viii. *L. rufus*, figured, &c.; A. KOENIG, J. f. O. 1888, pp. 180-187, pl. iii.

Pachycephala occidentalis, n. sp. [= *P. gutturalis* pt.], W. Australia; E. P. RAMSAY, Tab. List Austr. Birds, p. 32. *P. gilberti*?, notes on nesting; K. H. BENNETT, P. Linn. Soc. N.S.W. ii [1887], pp. 103 & 104.

R[hyac]ia meridionalis, n. sp., near *R. uropygialis*, Astrolabe Mts., New Guinea (this may prove to be the male of *R. brunneiceps*); *R. decipiens*, *R. cirrocephalus*, *R. rubiensis*, *R. dichrous*, may be all synonymous; *R. analogus* = *R. oruensis*, juv.; R. B. SHARPE, Ibis, 1888, p. 437. *R. aruensis* figured; id. [J. Gould], Birds New Guinea, pt. xxv.

Telephonus erythropterus, notes; A. KOENIG, J. f. O. 1888, pp. 176-178. *T. jamesi*, from Manda I., E. Africa; G. E. SHELLEY [F. J. Jackson], Ibis, 1888, p. 300.

MELIPHAGIDÆ.

Anthornis melanura figured [♂ ♀]; W. L. BULLER, Birds New Zealand, pl. ix.

Melidectes emilii figured; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxiv.

Myzomela sharpii [♂], n. sp., Guadalcanar, Solomon Archipelago; W. B. OGILVIE-GRANT, P. Z. S. 1888, p. 197, pl. x, fig. 3.

Philemon occidentalis, n. sp., near *P. sordidus*, Derby, N.W. Australia; E. P. RAMSAY, P. Linn. Soc. N.S.W. ii, p. 676, and Tab. List Austral. Birds, p. 12 bis.

Pogonornis cincta [♂ ♀] figured; W. L. BULLER, Birds New Zealand, pl. xi.

Prosthemadera novæ-zeelandiæ [ad. and juv.] figured; id. t. c. pl. x.

Zosterops; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiv. *Z. clara*, n. sp., near *Z. atrifrons*, Kina Balu Mt., N. Borneo; R. B. SHARPE [J. Whitehead], Ibis, 1888, p. 479. *Z. natalis*, n. sp., near *Z. mysoriensis*, Christmas I., Indian Ocean; J. J. LISTER, P. Z. S. 1888, pp. 518-520, pl. xxvii. *Z. nehrkorni*, n. sp. [♂], Great Sanghir I. [Celebes Sea]; W. BLASIUS, Braunsch. Anz. 1888, No. 9 (Jan. 11th), p. 86, and Ornith., 1888, pp. 593 & 594, pl. iv, fig. 1. *Z. cærulescens* figured; W. L. BULLER, Birds New Zealand, pl. ix. *Z. prætermisus* = *Z. anjuanensis*; notes on *Z. hooarum* and *Z. e-newtoni*; A. & E. NEWTON, Ibis, 1888, pp. 474-476.

MNIOTILTIDÆ.

The family, sub voce "Warbler"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiv.

Basileuterus godmani, n. sp., near *B. culicicorvus*, Veragua & Costa Rica; H. v. BERLEPSCH, Auk, 1888, pp. 450 & 451.

Cardellina rubrifrons nesting in S. Arizona (eggs new to science); W. W. PRICE, t. c. pp. 385 & 386.

Dendroica auricapilla, n. sp. [♂ ♀], I. of Grand Cayman, Caribbean Sea; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 572 & 573. *D. castive sonora*, n. subsp., S. Arizona, W. Texas, W. Mexico; W. BREWSTER, Auk, 1888, pp. 137-139. *D. discolor*, description of five nests and eggs; E. B. COUES, t. c. pp. 405-408. *D. kirtlandi* new to Atlantic slope of U.S.; H. M. SMITH & W. PALMER, t. c. p. 148. *D. petechia rufostrata* [cf. Zool. Rec. xxii, *Aves*, p. 40], = *D. petechia*; *D. dominica albilora* = *D. dominica*: O. SALVIN, Ibis, 1888, pp. 247, 248, & 250.

Geothlypis trichas occidentalis, from Yucatan, = *G. trichas*; id. t. c. p. 252.

Helminthophila lawrencii, a third specimen; C. G. VOORHEES, Auk, 1888, p. 427.

Protonotaria citrea, second Canadian specimen; K. C. McILWRAITH, t. c. p. 323.

Sirus noveboracensis in the Bay of Biscay; H. R. RABBETS, Ibis, 1888, pp. 494 & 495. *S. noveboracensis notabilis* = *S. noveboracensis*; O. SALVIN, t. c. p. 252: on Atlantic slope of U.S.; H. M. SMITH & W. PALMER, Auk, 1888, p. 148; L. M. LOOMIS, t. c. p. 324.

MOTACILLIDÆ.

The family pt., sub voce "Wagtail"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiv.

Anthus pratensis figured; LORD LILFORD, Col. Fig. Br. Birds, pt. ix.

Budytes melanocephalus, *B. raii* in Austro-Hungary; V. v. TSCHUSI ZU SCHMIDHOFFEN, MT. orn. Ver. Wien, 1888, pp. 79 & 80 [cf. L. v. LORENZ, Reisebericht, Ann. Hofmuseum Wien, ii [1887], Notizen, pp. 75 & 96. *B. flavus leucostriatus*, notes; E. W. NELSON, Rep. Nat. Hist. Alaska, pp. 205-208.

Motacilla sulphurea [♂ ad. and juv. (summer). ♂ ♀ (winter)]; *M. flava*, *M. raii*, *M. alba*, *M. lugubris* figured; LORD LILFORD, Col. Fig. Br. Birds, pts. vi & viii. *M. melanope*, vast flocks in Ceylon; S. BLYTH, Ibis, 1888, p. 316.

MUSCICAPIDÆ.

Cryptolopha, see *Sylviidæ*.

Digena leucops, n. sp., Shillong [Hume coll.] and Karen-nee [Twinedale coll.]; *D. malayana* [♂], n. sp., Mts. of Larut, Perak; *D. submoniliger* described; R. B. SHARPE, P. Z. S. 1888, pp. 246 & 247. [*Anthipes* revived as generic name for the two latter Birds and three allied species, and revised key to species also given.]

Gerygone thorpii, n. sp., Lord Howe's I., Australia; E. P. RAMSAY,

P. Linn. Soc. N.S.W. ii, p. 677. *G. flaviventris* figured; W. L. BULLER, Birds New Zealand, pl. xiv.

Leioptilus chocolatinus, curious specimen from Shoa [*Bradyornis traversii*, if distinct]; E. H. GIGLIOLI, Ann. Mus. Genov. xxvi, pp. 44 & 45 [cf. T. SALVADORI, t. c. p. 188].

Muscicapa parva in Ireland; R. M. BARRINGTON, Zool. 1888, p. 391.

Muscicapula westermanni [♂], n. sp., Gunong Ulu Batang Padang, Perak; R. B. SHARPE, P. Z. S. 1888, p. 270. *M. hyperythra* new to Borneo; id. [J. Whitehead], Ibis, 1888, p. 385.

Piezorhynchus sericeus, n. sp., Santo, New Hebrides; E. P. RAMSAY, P. Linn. Soc. N.S.W. iii [1888], pp. 1293 & 1294. *P. axillaris*, *P. medius* figured; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxv.

Poliophtila, see *Sylviidae*.

Pomarea erythrosticta [♀], n. sp., Fauro, Solomon Archipelago; R. B. SHARPE, P. Z. S. 1888, p. 185, cf. p. 194.

Rhinomyias gularis, n. sp. [♂, ♀ juv.], Kina Balu Mt., N. Borneo; id. [J. Whitehead], Ibis, 1888, pp. 385 & 386.

Rhipidura preissi, notes on breeding; A. J. NORTH, P. Linn. Soc. N.S.W. iii [1888], pp. 414 & 415.

Siphia ramsayi, n. sp. [♂ ♀], [= *S. elegans* (Timm.), = *Cyornis banyumas*, Tweeddale], Paláwan I.; *S. platana*, n. sp. [♂], Paláwan I.; W. BLASIUS, Braunsch. Anz. 1888, No. 52 (Mar. 1st), p. 467, and Ornith. 1888, pp. 308 & 310. *S. erithacus*, n. sp. [♂ ♀], Paláwan I.; R. B. SHARPE, Ibis, 1888, p. 199, pl. iv, fig. 2. The two latter said to be identical by W. BLASIUS, who claims priority; t. c. p. 372.

NECTARINIIDÆ.

Chalcomitra scioana [♂ ♀], n. sp., Sciotalit, Mahal-Uonz and Lago Zwai, Shoa; T. SALVADORI, Ann. Mus. Genov. xxvi, pp. 247 & 248.

Cinnyris [Eleocerthia] rayazzii [♀], n. sp., Forest of Fekeriè-ghem, Shoa; id. *ibid.* C. n. sp.? Liberia; J. BÜTTIKOFER, Notes Leyd. Mus. x [1888], pp. 72 & 73. *C. albiventris* and *C. kirki* breeding at Manda I., E. Africa; G. E. SHELLEY [F. J. Jackson], Ibis, 1888, p. 300.

ORIOLIDÆ.

Ælurædus melanocephalus figured; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxiv.

Oriolus galbula figured; LORD LILFORD, Col. Fig. Br. Birds, pt. ix.

Sphecothes maxillaris, its nidification; R. D. FITZGERALD, JUNR., P. Linn. Soc. N.S.W. ii, p. 970.

PARADISEIDÆ.

Lophorhinus minor, *Lycocorax obiensis* figured; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxiv.

Paradisea guillemi and *P. augustæ-victoriæ*, n. spp., King William's Land, New Guinea; J. CABANIS, J. f. O. 1888, p. 119.

PARIDÆ.

The family, *sub voce* "Titmouse"; A. NEWTON, *Encycl. Brit.* ed. 9, vol. xxiii.

Acredula rosea, *A. caudata* figured; E. H. GIGLIOLI & A. MANZELLA, *Icon. Avif. Ital.* pt. xli.

Cyanistes cyaneus, its geographical distribution; H. SCHALOW, J. f. O. 1888, p. 106. *C. flavipectus* [♂ ♀ and juv.] figured; M. A. MENZIEB, *Orn. du Turkestan*, pl. x.

Parus carolinensis agilis, n. subsp., Texas; G. B. SENNETT, *Auk*, 1888, p. 46. *P. [borealis] colletti*, n. subsp., W. ? Norway; L. STEJNEGER, *P. U. S. Nat. Mus.* 1888, pp. 74 & 75. *P. palustris*, *P. cristatus* and allies; *id. t. c.* pp. 71-76, 113, & 114. *P. cypristes* [*cf. Zool. Rec.* xxiv, *Aves*, p. 51] figured; F. H. H. GUILLEMARD, *Ibis*, 1888, pp. 119 & 124, pl. ii. *P. palustris*, *P. cæruleus* figured; LORD LILFORD, *Col. Fig. Br. Birds*, pt. vi.

Pæcile borealis, *P. lugubris* figured; E. H. GIGLIOLI & A. MANZELLA, *Icon. Avif. Ital.* pts. xl & xli.

Psaltriparus lloydi, n. sp. [♂ ♀ ad. and juv., nest and egg], Mts. of W. Texas; G. B. SENNETT, *Auk*, 1888, pp. 43 & 44. *P. santarita*, n. sp. [♂ ♀], Santa Rita Mts., S. Arizona; R. RIDGWAY, *P. U. S. Nat. Mus.* 1887, p. 697. *P. plumbeus*, nest and eggs (new to science); C. E. BENDIRE, *t. c.* pp. 557 & 558.

PLOCEIDÆ.

The family, *sub voce* "Weaver-bird"; A. NEWTON, *Encycl. Brit.* ed. 9, vol. xxiv.

Amblyospiza concolor, n. sp. [♂], I. of St. Thomas, W. Africa; J. V. BARBOZA DU BOCAGE, *J. Sci. Lisb.* 1888 [xlviii], pp. 229 & 230. *A. melanotis*, plumage of ♂ ♀, nest and eggs, &c.; G. HARTLAUB [Emin Pasha], J. f. O. 1888, pp. 1-4.

Donacicola hunsteini figured; R. B. SHARPE [J. Gould], *Birds New Guinea*, pt. xxiv.

Estrela nigrimentum, n. sp., Farré, Shoa; T. SALVADORI, *Ann. Mus. Genov.* xxvi, p. 281. *E. thomensis*, n. sp., I. of St. Thomas, W. Africa; J. A. DE SOUSA [*ex Moller*], *J. Sci. Lisb.* 1888 [xlvii], p. 155.

Habropyga tenerrima [*cf. Zool. Rec.* xxiv, *Aves*, p. 52], = *Estrela nonnula*; G. E. SHELLEY, *P. Z. S.* 1888, pp. 31 & 32.

Lagonosticta anochroa, Hartl., *L. melanogastra*, Shelley, are both identical with *L. rara* (Antin.); *id. t. c.* p. 31.

Munia oryzivora [♂ ♀ and juv.] figured; E. BARTLETT, *Monogr. Weaver-Birds and Finches*, &c., pt. i.

Nigrita canicapilla from Liberia, should be *N. emilie*; J. BÜTTIKOFER, *Notes Leyd. Mus.* x [1888], p. 90 [*cf. op. cit.* viii, p. 261].

Philetarus [Nigrita] cabanisi figured, from Kilima-njaro; G. E. SHELLEY [F. J. JACKSON], Ibis, 1888, p. 292, pl. vi.

Plocepasser rufoscapulatus, n. sp. [♂], Kasinga R., S.W. Africa; J. BÜTTIKOFER, Notes Leyd. Mus. x [1888], pp. 238 & 239, pl. ix, fig. 2.

Ploceus jacksoni, n. sp. [♂], Kilima-njaro; G. E. SHELLEY [F. J. JACKSON], Ibis, 1888, p. 293, pl. vii. *P. castanops* [♂ ♀], n. sp., locality not stated, Equat. Africa; *id.* t. c. p. 35.

Spermospiza ruficapilla [♀], n. sp., Bellima, Equat. Africa; *id.* t. c. p. 30.

Textor dinemelli [♂], *T. boehmi* [♀], *T. panicivora* [♂ ♀], *T. albirostris* [♂ ♀] figured; E. BARTLETT, Monogr. Weaver-Birds and Finches, pts. i & ii.

Urobrachia traversii [♂], n. sp., Sutta, Shoa; T. SALVADORI, Ann. Mus. Genov. xxvi, pp. 287 & 288.

PYCNONOTIDÆ.

Criniger platenæ, n. sp. [♂], Great Sanghir I. [Celebes Sea]; W. BLASIUS, Braunsch. Anz. 1888, No. 9 (Jan. 11th), p. 86, and Ornith., 1888, pp. 595 & 596, pl. iv, fig. 2.

Hypsipetes pryori [cf. Zool. Rec. xxiii, Aves, p. 51], = *H. amaurotis squamiceps* (Kittlitz); H. SEEBOHM, Ibis, 1888, pp. 232 & 233.

Iole stratiiceps, n. sp. [♀], near *I. viridescens*, Palawan I.; R. B. SHARPE [J. Whitehead], t. c. pp. 200 & 201.

Oreocistes leucops, n. g. & sp. [♂ ♀], Kina Balu Mt., N. Borneo; *id.* [J. Whitehead], t. c. pp. 388 & 389, pl. ix, fig. 1.

SITTIDÆ.

Fossil remains (new species), see PORTIS, A.

Dendrophila corallipes, n. sp., near *D. frontalis*, Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1888, p. 479.

Sitta amurensis clara [cf. Zool. Rec. xxiii, Aves, p. 51] is not a good species; H. SEEBOHM, t. c. p. 240. *S. cæsia* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. viii.

STURNIDÆ.

Acridotheres albocinctus figured from the type; E. W. OATES, Ibis, 1888, p. 72, pl. i.

Pastor roseus figured; LORD LILFORD, Col. Fig. Br. Birds, pt. vii.

Poliopsar, n. g., for *P. sericeus*, *P. cineraceus*, *P. burmanicus*, *P. leucocephalus*, *P. andamanensis*, *P. erythropygius*, *P. malabaricus*, *P. nemorica*, *P. blythi*, with *P. colletti*, n. sp., near *P. cineraceus*, loc. incert., *P. cambodianus*, n. sp., near *P. leucocephalus*, Cambodia; R. B. SHARPE, Ibis, 1888, pp. 476 & 477.

Sturnus menzbieri, n. sp., Siberia to India; *S. porphyronotus*, n. sp., Yarkand and India; *id. t. c.* pp. 438 & 439. (A key to the species is added.)

SYLVIIDÆ.

The family *sub voce* "Warbler"; A. NEWTON, *Encycl. Brit.* ed. 9, vol. xxiv.

Acanthiza uropygialis, its nest and eggs; R. H. NANCARROW, *Vict. Nat.* iv [1888], pp. 206-208.

Acanthornis, *Acanthiza*, and *Sericornis*, remarks; W. V. LEGGE, *Ibis*, 1888, pp. 93 & 94 [*cf.* *Zool. Rec.* xxiv, *Aves*, p. 54].

Accentor collaris figured; LORD LILFORD, *Col. Fig. Br. Birds*, pt. vii.

Acrocephalus aquaticus figured; *id. op. cit.* pt. ix.

Calamodus schænobænus figured; E. H. GIGLIOLI & A. MANZELLA, *Icon. Avif. Ital.* pt. xxxviii.

Cettia oreophila, n. sp. [♂ ♀], Kina Balu Mt., N. Borneo; R. B. SHARPE, *Ibis*, 1888, pp. 387 & 388.

Cryptolopha darisoni [♂], n. sp., Gunong Ulu Batang Padang, Perak; *id.* P. Z. S. 1888, p. 271. *O. trivirgata*, new to Borneo; *id.* [J. Whitehead], *Ibis*, 1888, p. 385.

Cyanecula suecica figured; E. W. NELSON, *Rep. Nat. Hist. Alaska*, p. 220, pl. xii, fig. 1.

Daulias luscinia figured; LORD LILFORD, *Col. Fig. Br. Birds*, pt. ix.

Dromolæa leucopyga figured; E. H. GIGLIOLI & A. MANZELLA, *Icon. Avif. Ital.* pt. xxxix.

Ephthianura crocea figured; R. B. SHARPE [J. Gould], *Birds New Guinea*, pt. xxiv.

Hypolais icterina mollesoni, n. subsp., Tastuba, Orenburg District; N. ZARUDNOI, *Bull. Mosc.* 1888 (pub. 1889), pp. 675 & 676.

Locustella naevia figured; LORD LILFORD, *Col. Fig. Br. Birds*, pt. ix.

Myiomoira traversi, from Snaros Is., N. Z.; O. FINSCH, *Ibis*, 1888, pp. 308 & 309.

Phylloscopus borealis figured; E. W. NELSON, *Rep. Nat. Hist. Alaska*, p. 214, pl. xii, fig. 2.

Polioptila californica, its nest and eggs; C. E. BENDIRE, *P. U. S. Nat. Mus.* 1887, pp. 549 & 550.

Regulus satrapa, its nest, eggs, &c.; W. BREWSTER, *Auk*, 1888, pp. 337-344.

Ruticilla tithys [supposed] nesting in Essex; W. R. OGILVIE-GRANT, *Zool.* 1888, p. 390.

Saricola pt., *sub voce* "Wheatear"; A. NEWTON, *Encycl. Brit.* ed. 9, vol. xxiv. *S. deserti*, second occurrence in Scotland (Arbroath), third in Britain; H. M. DRUMMOND-HAY, *Ibis*, 1888, pp. 283-285; A. N. SIMPSON, *Scot. Nat.* 1889, p. 290 [*cf.* P. Z. S. 1888, p. 140, and *Zool. Rec.* xxiii, *Aves*, p. 53]: figured by H. SAUNDERS in *Manual of Brit. Birds*, p. 25. *S. isabellina*, new to Britain and W. Europe; H. A. MACPHERSON, *Ibis*, 1888, pp. 149 & 150, and *Zool.* 1888, p. 329: figured:

H. SAUNDERS, *Manual Brit. Birds*, p. 21. *S. stapazina* figured; *id. t. c.* p. 23.

Sylvia pt., *sub voce* "Whitethroat"; A. NEWTON, *Encycl. Brit.* ed. 9, vol. xxiv.

TANAGRIDÆ.

The family, *sub voce* "Tanager"; A. NEWTON, *Encycl. Brit.* ed. 9, vol. xxiii; see also SHUFELDT, R. W., in *Fringillidæ*.

Buarremon simplex, n. sp., near *B. elaeoprorus*, Bogotá, Colombia; H. v. BERLEPSCH, *Ibis*, 1888, pp. 128 & 129.

Eucometis spodocephala pallida, *E. s. stictothorax*, *E. cristata affinis*, n. subsp., Yucatan, Veragua, and Pt. Cabello, Venezuela respectively; *id.*, *Auk*, 1888, pp. 451-454.

Phanicothraupis insularis, n. sp., near *P. salvini*, Meco & Mugeris Is., Yucatan; O. SALVIN, *Ibis*, 1888, p. 259.

Pitylus polioaster scapularis, n. subsp., S. Honduras to Panama; R. RIDGWAY, *P. U. S. Nat. Mus.* 1887, p. 586.

Stephanophorus leucocephalus figured; P. L. SCLATER & W. H. HUDSON, *Argent. Orn. i*, p. 38, pl. iv.

TIMELIIDÆ.

Allocotops calvus, n. g. & sp. [♂ juv., ♀], Kina Balu Mt., N. Borneo; R. B. SHARPE [J. Whitehead], *Ibis*, 1888, p. 389.

Androphilus accentor, n. g. & sp. [♂ ♀], Kina Balu Mt., N. Borneo; *id. t. c.* pp. 390 & 391, pl. ix, fig. 2.

Brachypteryx erythrogyna, n. sp. [♂ ♀], Kina Balu Mt., N. Borneo; *id. t. c.* pp. 389 & 390, pl. x.

Chlorocharis emilia, n. g. & sp. [♂ ♀], Kina Balu Mt., N. Borneo; *id. t. c.* pp. 392 & 393, pl. xi, fig. 1.

Cisticola cinereola [♀], n. sp., Farrè, Shoa; T. SALVADORI, *Ann. Mus. Genov.* xxvi, pp. 254 & 255. *C. cursitans* figured; E. H. GIGLIOLI & A. MANZELLA, *Icon. Avif. Ital.* pt. xxxviii.

Corythocichla crassa, n. sp. [♂ ♀], Kina Balu Mt., N. Borneo; R. B. SHARPE [J. Whitehead], *Ibis*, 1888, pp. 391 & 392.

Cutia cervinirissa [♂ ♀], n. sp., Gunong Batu Puteh, Perak; R. B. SHARPE, *P. Z. S.* 1888, p. 276.

Gampsorhynchus saturator [♀], n. sp., Gunong Batu Puteh, Perak; *id. t. c.* pp. 273 & 274.

Garrulax schistochlamys, n. sp., near *G. palliatus*, Kina Balu Mt., N. Borneo; *id. Ibis*, 1888, p. 479.

Icoturus namiyai [cf. *Zool. Rec.* xxiii, *Aves*, p. 53] is an *Erithacus*; H. SEEBOHM, *Ibis*, 1888, p. 233 & 234.

Malurus pulcherrimus, notes on breeding; A. J. NORTH, *P. Linn. Soc. N.S.W.* iii [1888], p. 415.

Melanocichla peninsularis [♂], n. sp., Gunong Batu Puteh, Perak; R. B. SHARPE, *P. Z. S.* 1888, p. 274.

Neocichla kelleni, n. sp. [♂], near *N. g. tturalis*, Umbella R., S.W. Africa; J. BÜTTIKOFER, Notes Leyd. Mus. x [1888], pp. 229 & 230, pl. ix, fig. 1.

Phyllergates cinereicollis, n. sp., near *P. cucullatus*, Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1888, p. 479.

Siva sordidior, n. sp. [= *S. sordida*, Sharpe (nec Hume)], Batang Padang Mts., Perak; *id.* P. Z. S. 1888, p. 276.

Sphenæacus fulvus from Snares Is., N. Z.; O. FINSCH, Ibis, 1888, p. 308.

Stiphrornis alboterminata, Reichenow, is an *Antheptes*; J. BÜTTIKOFER, Notes Leyd. Mus. x [1888], p. 212.

Turdinulus exul [♂], n. sp., near *T. roberti*, Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1888, p. 479.

TROGLODYTIDÆ.

The family, *sub voce* "Wren"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiv: osteology, see LUCAS, F. A.

Notes on some type specimens of American species in the Lafresnaye Collection [Boston]; R. RIDGWAY, P. Bost. Soc. xxiii, pp. 383-388.

Campylorhynchus castaneus, n. sp., Guatemala and Honduras; *id.* P. U. S. Nat. Mus. 1887, p. 507. *C. curvirostris*, n. sp. (ex Lafr. MS.), "N. Granada"; *id.* P. Bost. Soc. xxiii, pp. 385 & 386. *C. zonatus costaricensis*, n. subsp., Parita, Costa Rica; H. v. BERLESCHE, Auk, 1888, pp. 449 & 450. *C. brevirostris* = *C. zonatoides*, juv.; R. RIDGWAY, P. Bost. Soc. xxiii, p. 384. *C. palliceps* = *C. balteatus*, Baird; *O. pallescens* of Lafresnaye (collection?) is not the bird usually so called; *C. pallescens*, auct., is *C. megalopterus* of Lafresnaye; *id.* t. c. pp. 384 & 385.

Cistothorus mariana, n. sp. [♂ ♀], near *C. palustris*, Tarpon Springs, Florida; W. E. D. SCOTT, Auk, 1888, p. 188: further specimens, Safole I., Georgia; W. BREWSTER, t. c. p. 432.

Cyphorhinus griseolateralis [♀ ? ♀], n. sp., Diamantina Mts., Lower Amazon; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 518 & 519.

Hemiura, n. g., for *Uropsila*, Scl. & Salv.; *id.* t. c. p. 511.

Microcerculus daulias, n. sp., Costa Rica (Atlantic side); *id.* t. c. pp. 508 & 509.

Orthocichla whiteheadi [♂], n. sp., Kina Balu Mt., N. Borneo; R. B. SHARPE, Ibis, 1888, pp. 478 & 479.

Thryophilus tanioptera, n. sp. [♂], Diamantina, Lower Amazon; R. RIDGWAY, P. U. S. Nat. Mus. 1887, p. 518.

Thryothorus herberti [♂, ♀ juv.], Diamantina, Lower Amazon, *T. oyapocensis*, Oyapoc, French Guiana, n. spp.; *id.* t. c. pp. 516 & 517. *T. rufifrons castanonotus*, n. subsp., Nicaragua to Colombia; *id.* t. c. p. 508, and P. Bost. Soc. xxiii, p. 386. *T. fasciato-ventris*, notes on subspecies; *T. ruficeps*, Lafresnaye MS., = *T. felix*, Sclater; *id.* P. Bost. Soc. xxiii, pp. 387 & 388.

Troglodytes cahooni, n. sp. [♂], Mts. near Oposura, Sonora, Mexico; W. BREWSTER, Auk, 1888, pp. 94 & 95. *T. tobagensis*, n. sp., near *T. striatulus*, I. of Tobago; G. N. LAWRENCE, t. c. p. 404. *T. aedon*, its varieties discussed; W. E. D. SCOTT & J. A. ALLEN, t. c. pp. 163 & 164.

T. tecellata, Laf. & D'Orb., = *T. brunneicollis*, ScL.; R. RIDGWAY, P. Bost. Soc. xxiii, p. 388.

TURDIDÆ.

The family, *sub voce* "Thrush"; A. NEWTON, *Encycl. Brit.* ed. 9, vol. xxiii: osteology, see LUCAS, F. A.

Cutharus berlepschi, n. sp. [♂], W. Ecuador, Cayandeled; G. N. LAWRENCE, P. U. S. Nat. Mus. 1887, p. 503: Ecuador and Peru; R. RIDGWAY, *l. c.* p. 504. *C. fumosus*, n. sp. [♂], Costa Rica and Veragua; *id. l. c.* p. 505.

Geocichla aurata, n. sp., near *G. citrina*, Kina Balu Mt., N. Borneo; R. B. SHARPE, *Ibis*, 1888, p. 478. *G. princii*, a second specimen, Liberia; J. BÜTTIKOFER, *Notes Leyd. Mus.* x [1888], pp. 77 & 78. *G. schistacea* figured; R. B. SHARPE [J. Gould], *Birds New Guinea*, pt. xxiv.

Harporhynchus longirostris sennetti, n. subsp., S. Texas; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 506 & 507.

Margarops montanus rufus, n. subsp., Dominica, W. I.; C. B. CORY, *Auk*, 1888, p. 47.

Merula seebohmi, n. sp. [♂, ♀ juv.], near *M. javanica*, Kina Balu Mt., N. Borneo; R. B. SHARPE [J. Whitehead], *Ibis*, 1888, pp. 386 & 387. *M. subalaris* [*cf. Zool. Rec.* xxiv, *Aves*, p. 58] is from Peru; J. CABANIS, *J. f. O.* 1888, p. 113.

Miminae, see LUCAS, F. A. [osteology as a guide to position]. *M. gracilis leucophæus*, n. subsp., Cozumel I., Yucatan; R. RIDGWAY, P. U. S. Nat. Mus. 1887, p. 506. *M. triurus* figured; P. L. SCLATER & W. H. HUDSON, *Argent. Orn.* i, pp. 8-11, pl. i.

Monticola angolensis, n. sp. [♂ ♀], Caconda, Quando, Rio Quango, and Quindumbo, in Angola; J. A. DE SOUSA, *J. Sci. Lisb.* 1888 [xlviii], pp. 233-235.

Turdus merula figured; LORD LILFORD, *Col. Fig. Br. Birds*, pt. vii. *T. pallasi* figured; E. H. GIGLIOLI & A. MANZELLA, *Icon. Avif. Ital.* pt. xl. *T. swainsoni* new to Austro-Hungary (with the exception of an example mentioned in Bononi's "Avifauna Tridentina" [*cf. Zool. Rec.* xxi, *Aves*, p. 6]); V. V. TSCHUSI ZU SCHMIDHOFFEN, *l. c.* p. 79: figured; E. H. GIGLIOLI & A. MANZELLA, *Icon. Avif. Ital.* pt. xxxix. *T. torquatus* and its geographical races; H. SEEBOHM, *Ibis*, 1888, pp. 309-312: breeds in Orkney; J. W. H. TRAIL, *Scot. Nat.* 1888, p. 344.

VIREONIDÆ.

BERLEPSCH, H. v. On the Genus *Cyclorhis*, Swains. *Ibis*, 1888, pp. 83-92.

The writer bases his remarks on Sclater's paper on the above genus [*cf. Zool. Rec.* xxiv, *Aves*, p. 58], with which he agrees in the main. He gives a clear exposition of his views, with a key to the species.

Cyclorhis ochrocephala, *C. altirostris* figured; P. L. SCLATER & W. H. HUDSON, *Argent. Orn.* i, pp. 23 & 24, pl. iii.

Vireo cinereus [*cf. Zool. Rec.* xxii, *Aves*, p. 46] certainly = *V. magister*;

O. SALVIN, *Ibis*, 1888, p. 254. *V. solitarius alticola*, its nest and eggs; W. BREWSTER, *Orn. & Ool.* 1888, p. 113, and R. B. McLAUGHLIN, *ibid.*

OLIGOMYODI.

COTINGIDÆ.

The family, see SCLATER, P. L.

Attila viridescens, n. sp. [♂], Diamantina Mt., Lower Amazon; R. RIDGWAY, P. U. S. Nat. Mus. 1887, p. 522.

Hadrostomus homochrous [♂ ♀] figured; P. L. SCLATER, *Cat. Birds Brit. Mus.* xiv, pp. 334 & 335, pl. xxiv.

Iodopleura leucopygia figured; *id. t. c.* p. 393, pl. xxvi.

Pachyrhamphus spodiurus [♂ ♀] figured; *id. t. c.* pp. 341 & 342, pl. xxv.

Tityra cayana, first and second primaries figured; *T. personata* = *T. semifasciata*; *T. fraseri* = *T. albitorques*; *id. t. c.* pp. 327, 330, & 332. *T. personata griseiceps*, n. subsp., W. Mexico; R. RIDGWAY, *Auk*, 1888, p. 263. *T. nigriceps*, n. sp., Napo R., Ecuador; J. A. ALLEN, *t. c.* pp. 287 & 288.

EURYLÆMIDÆ.

The family, see SCLATER, P. L.

Calyptomena whiteheadi figured, with notes on plumage of ♀ juv.; R. B. SHARPE, *Ibis*, 1888, p. 231, pl. v [cf. *Zool. Rec.* xxiv, *Aves*, p. 41].

OXYRHAMPHIDÆ, PHILEPITTIDÆ, PHYTOTOMIDÆ.

The families, see SCLATER, P. L.

Phytotoma rutila [♂ ♀] figured; P. L. SCLATER & W. H. HUDSON, *Argent. Orn.* i, p. 161, pl. viii.

PIPRIDÆ.

The family, see SCLATER, P. L.

Ceratopipra iracunda figured; P. L. SCLATER, *Cat. Birds Brit. Mus.* xiv, p. 288, pl. xix.

Chloropipo holochlora, n. sp. [= *Pipra cornuta*, ♀, *Sci. & Salv.*], Colombia and Amazonia; *id. t. c.* p. 287.

Heterocercus aurantivertex figured; *id. t. c.* p. 325, pl. xxiii.

Heteropelma wallacii, *H. flavicapillum*, *H. igniceps*, figured; *id. t. c.* pp. 319, 321, & 322, pls. xx-xxii.

Macharopterus deliciosus, secondaries figured; *id. t. c.* p. 306.

Pipra coracina = *P. leucocilla*; *id. t. c.* p. 298.

PITTIDÆ.

The family, see SCLATER, P. L.

Pittu, new method of division; P. L. SCLATER, *Cat. Birds Brit. Mus.* xiv, p. 414.

oracopitta, n. g., for *Melampitta*; *id. t. c.* p. 449.

TYRANNIDÆ.

On account of the important work done by P. L. SCLATER and F. D. GODMAN & O. SALVIN [q.v.] in this family, their views are given at some length below, with regard to various species.

Agriornis pollens, *A. insolens*, *A. solitaria* figured; P. L. SCLATER, Cat. Birds Brit. Mus. xiv, pp. 7 & 8, pls. i-iii.

Cænotriccus, n. g. [for *Todirostrum* (*Serphophaga*) *ruficeps*]; *id. t. c.* p. 86.

Camplostoma flaviventris = *Ornithion pusillum*; F. D. GODMAN & O. SALVIN, Biol. Centr. Am. pt. lxxii, *Aves*, vol. ii, p. 31.

Cnipodectes subbrunneus figured; P. L. SCLATER, Cat. Birds Brit. Mus. xiv, p. 197, pl. xvi.

Colopteryx inornatus, n. g. & sp. [♀], Diamantina, Lower Amazon; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 519 & 520.

Contopus vicinus, n. sp. [♂], near *C. virens*, Swan I., Caribbean Sea; *id. t. c.* pp. 576 & 577.

Elainia, see *Myiopagis*, *infra*. *E. barbadensis*, n. sp. [♂], Barbadoes, W. I.; C. B. CORY, Auk, 1888, p. 47. *E. ridleyana*, n. sp. [♂], Fernando Noronha I.; R. B. SHARPE, P. Z. S. 1888, p. 107. *E. arenarum* (figured) must be removed to genus *Sublegatus*; F. D. GODMAN & O. SALVIN, Biol. Centr. Am. pt. lxxii, *Aves*, vol. ii, pp. 37 & 38, pl. xxxvi, fig. 3. *E. semiflava*, Lawr., = *Capsiempis flaveola*; *E. subpagana*, *E. chiriquensis* must be merged in *E. pagana*; *E. cinerescens*, Ridgw., = *E. martinica*; *id. t. c.* pp. 29, 35, & 36. *E. olivina* figured; P. L. SCLATER, Cat. Birds Brit. Mus. xiv, p. 146, pl. xii. *E. subpagana* and *E. semipagana* must be considered as synonyms of *E. pagana*; *E. cristata*, *E. albivertex*, and *E. griseigularis* of *E. albiceps*; *id. t. c.* pp. 138 & 142.

Empidochanes salvini, n. sp. [= *F. pæcilurus*?, Salv., Ibis, 1885, p. 298], Venezuela and Brit. Guiana; *id. t. c.* p. 218.

Empidonax cineritius, n. sp. [♂ ♀], near *E. difficilis*, S. of Lower California; W. BREWSTER, Auk, 1888, pp. 90 & 91.

Euscarthmus apicalis [cf. Zool. Rec. xxiv, *Aves*, p. 42], = *Ceratotriccus furcatus*; P. L. SCLATER, Cat. Birds Brit. Mus. xiv, p. 85. *E. russatus*, *E. impiger* figured; *id. t. c.* pp. 82 & 84, pl. ix.

Legatus variegatus must be merged in *L. albicollis*; F. D. GODMAN & O. SALVIN, Biol. Centr. Am. pt. lxxii, *Aves*, vol. ii, p. 39, and P. L. SCLATER, Cat. Birds Brit. Mus. xiv, p. 156.

Leptopogon erythrops figured: *id. t. c.* p. 119, pl. x.

Leptotriccus superciliaris figured; F. D. GODMAN & O. SALVIN, Biol. Centr. Am. pt. lxxii, *Aves*, vol. ii, pp. 18 & 19, pl. xxxvi, fig. 2.

Megarhynchus chrysogaster = *M. pitangua*; P. L. SCLATER, Cat. Birds Brit. Mus. xiv, p. 190.

Mionectes assimilis should be merged in *M. oleagineus*; F. D. GODMAN & O. SALVIN, Biol. Centr. Am. pt. lxxii, *Aves*, vol. ii, p. 23.

Mitrephanes phæocercus tenuirostris, n. subsp., W. Mexico; W. BREWSTER, Auk, 1888, p. 137.

Muscivora occidentalis, ♂ ♀ figured; P. L. SCLATER, Cat. Birds Brit. Mus. xiv, p. 194, pl. xv.

Myiarchus ferox, note on synonymy; *id. t. c.* p. 253. *M. berlepschi*, n. sp., near *M. oberi*, St. Kitts, W. I.; C. B. CORY, Auk, 1888, p. 266.

Myiobius ridgwayi, n. sp., near *M. xanthopygus*, Petropolis, Prov. Rio de Janeiro, S. Brazil; H. v. BERLEPSCH, t. c. pp. 457 & 458. *M. atricaudus* should be a subsp. of *M. barbatus*; *M. flavicans*, *M. roraimae* figured; P. L. SCLATER, Cat. Birds Brit. Mus. xiv, pp. 200, 205, & 206, pla. xvii & xviii.

Myiopagis, n. g. [type *Elainea placens*]; F. D. GODMAN & O. SALVIN, Biol. Centr. Am. pt. lxxii, *Aves*, vol. ii, p. 26.

Myiozetetes texensis, *M. marginatus* must be merged in *M. cayennensis*; iid. t. c. p. 40: the former probably = *M. similis*; P. L. SCLATER, Cat. Birds Brit. Mus. xiv, p. 162.

Oethæa leucometopa, *O. citrinifrons*, *O. pulchella* figured; id. t. c. pp. 21, 22, & 23, pla. vi & vii.

Ochthodonta fusco-rufus figured; id. t. c. p. 18, pl. v.

Ochthornis, n. g. [for *Elainea* (*Ochthæa*) *murina*]; id. t. c. p. 31.

Ornithion napæum, n. sp. [♀], Diamantina, Lower Amazon; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 520 & 521.

Pitangus maximiliani should be a subsp. of *P. sulphuratus*; P. L. SCLATER, Cat. Birds Brit. Mus. xiv, p. 177.

Platyrhynchus flavigularis, *P. albigularis* figured; id. t. c. pp. 65-67, pl. viii.

Rhynchocyclus fulvipectus figured; id. t. c. pp. 167 & 168, pl. xiii. *R. mesorhynchus*, *R. griseimentalis* should be merged in *R. breirostris*; *R. flavo-olivaceus* in *R. sulphureus*; F. D. GODMAN & O. SALVIN, Biol. Centr. Am. pt. lxxii, *Aves*, vol. ii, pp. 8 & 10.

Serphophaga grisea should be merged in *S. cinerea*; iid. t. c. p. 20.

Sirystes albocinereus figured; P. L. SCLATER, Cat. Birds Brit. Mus. xiv, pp. 181 & 182, pl. xiv.

Teniotera holopodia figured; id. t. c. p. 14, pl. iv. *T. rubetra* figured; id. & W. H. HUDSON, Argent. Orn. i, p. 120, pl. vii.

Todirostrum superciliaris should be merged in *T. schistaceiceps*; F. D. GODMAN & O. SALVIN, Biol. Centr. Am. pt. lxxii, *Aves*, vol. ii, p. 14.

Tyranniscus cinereiceps, *T. gracilipes* figured; P. L. SCLATER, Cat. Birds Brit. Mus. xiv, pp. 131-133, pl. xi. *T. viridissimus* = *T. bolivianus*; id. t. c. pp. 134 & 135.

Tyrannulus reguloides, n. sp., Diamantina, Lower Amazon; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 521 & 522. *T. semiflavus* figured; F. D. GODMAN & O. SALVIN, Biol. Centr. Am. pt. lxxii, *Aves*, vol. ii, p. 32, pl. xxxvi, fig. 1.

XENICIDÆ.

The family, see SCLATER, P. L.

Acanthidositta chloris [♂ ♀], *Xenicus longipes*, *X. gilviventris* figured; W. L. BULLER, Birds New Zealand, pl. xii.

TRACHEOPHONÆ.

DENDROCOLAPTIDÆ.

Dendrocolaptes obsoletus, n. sp. [♂], Diamantina, Lower Amazon; R. RIDGWAY, P. U. S. Nat. Mus. 1887, p. 527.

Dendronis fraterculus, n. sp. [♂], Diamantina, Lower Amazon; *D. lawrencii*, n. sp., Panama; *D. l. costaricensis*, n. subsp., Costa Rica and Nicaragua; *id. t. c.* pp. 526-527, 509, 510, & 589.

Drymornis bridgesi figured; P. L. SCLATER & W. H. HUDSON, Argent. Orn. i, pp. 199 & 200, pl. x.

Furnarius cristatus, n. sp., confounded with *F. tricolor*, Argentine Republic; H. BURMEISTER, Ibis, 1888, p. 495.

Homorus lophotes figured; P. L. SCLATER & W. H. HUDSON, Argent. Orn. i, pp. 195 & 196, pl. ix.

Phacellodomus striaticollis, and not *P. ruber*, is the species found in the Argentine Republic; P. L. SCLATER, Ibis, 1888, p. 467.

Synallaxis coryi, n. sp., Merida, Venezuela; H. V. BERLEPSCH, Auk, 1888, pp. 458-460.

FORMICARIIDÆ.

Dichrozona sononota, n. g. & sp., Diamantina, Lower Amazon; R. RIDGWAY, P. U. S. Nat. Mus. 1887, p. 524.

Heterocnemis? hypoleuca, n. sp.? [♀], Diamantina, Lower Amazon; *id. t. c.* p. 523.

Myrmeciza boucardi, n. sp., = *M. longipes*, Scl. (*nec auct.*), Bogotá, Colombia; *M. swainsoni*, new specific name proposed for *M. longipes*, *auct.*, as not agreeing with Vieillot's description; H. V. BERLEPSCH, Ibis, 1888, pp. 129 & 130.

Phlogopsis bowmani, n. sp. [♂], Diamantina Mt., Lower Amazon; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 524 & 525.

Rhegmatorhina gymnops, n. g. & sp. [♂ ♀], Diamantina Mts., Lower Amazon; *id. t. c.* pp. 525 & 526.

Thamnophilus inornatus, n. sp. [♂], Diamantina Mt., Lower Amazon; *T. intermedius*, n. sp. [♂ ♀], Honduras (Truxillo); *id. t. c.* pp. 522, 523, & 581.

PTEROPTOCHIDÆ.

The family, *sub voce* "Tapaculo"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiii.

Pteroptochus albicollis figured; *id. ibid.*

PICARIÆ.

PICIDÆ.

The family, *sub voce* "Woodpecker," "Wryneck"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiv. *Melanerpes formicivorus* figured; *id. ibid.*

HARGITT, E. Notes on Woodpeckers. No. xiv. On the Genus *Gecinus*. Ibis, 1888, pp. 1-42 & 153-193. [*Cf.* Zool. Rec. xxiv, *Aves*, p. 59.]

16 species are recognized, while keys to these and to the plumage of ♂ ♀ adult are given. See also below.

SHUFFELDT, B. W. Observations on the Pterylosis of certain *Picidae*. Auk, 1888, pp. 212-218, 4 cuts (5 figs.) [cf. p. 332].

The writer differs from Nitzsch in finding, as regards *Sphyrapicus varius nuchalis*, no vertical and apparently no temporal space destitute of contour-feathers on the head, while he notes a difference in the shape of the ventral tracts in various species, and the occurrence of post-ventral tracts in *Dryobates*. [Cf. Zool. Rec. xxiv, *Aves*, p. 34.]

——. Notes on [the pterylosis and anatomy of] *Melanerpes torquatus*. T. c. pp. 319 & 320.

BENDIRE, C. E. Notes on the Habits, Nests, and Eggs of the Genus *Sphyrapicus*, Baird. T. c. pp. 225-240.

S. varius, *S. r. nuchalis*, *S. ruber*, *S. thyroideus*.

Centurus santacrusi pauper, n. subsp., Honduras (Truxillo), Salvador ? ;

R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 582 & 583.

Chloropicus mentalis, *C. miniatus* should be referred to genus *Chrysophlegma*; E. HARGITT, Ibis, 1888, p. 2.

Chrysophlegma chlorolophus, *C. chlorigaster*, *C. puniceus* are to be referred to the genus *Gecinus*; *id. t. c.* pp. 176-189. *C. wrayi*, n. sp. [♀]. Gunong Batu Puteh, Perak; R. B. SHARPE, P. Z. S. 1888, pp. 279 & 280.

Gecinus tuncolo (Gould), = *G. guerini* (Malh.); *G. zarudnoi*, Menabier, = *G. squamatus*?; *G. xanthopygius*, Rehb., = *G. striolatus*, Blyth; E. HARGITT, Ibis, 1888, pp. 11-14, 153-155, & 171-176.

Iynx, see above, *sub voce* Wryneck.

Melanerpes, see above, *sub voce* Woodpecker.

Picoides albidior fully diagnosed for the first time; L. STEJNEGER, P. U. S. Nat. Mus. 1888, p. 168.

Picus lifordi in Austro-Hungary (Dalmatia); V. V. TSCHUSI ZU SCHMIDHOFFEN, MT. orn. Ver. Wien, 1888, p. 64; cf. L. V. LORENZ, Verh. z.-b. Wien, 1888, p. 19; in Bosnia; O. REISER, J. f. O. 1888, p. 45. *P. major* figured, with a second plate to illustrate the progress of change in colouration of head in both sexes; LORD LILFORD, Col. Fig. Br Birds, pts. vii & ix.

Sphyrapicus, cf. *supra*.

TROCHILIDÆ.

Agyrtria alleni, n. sp., Yungas, Bolivia; D. G. ELLIOT, Auk, 1888, pp. 263 & 264.

Thalurania townsendi, n. sp. [♂ ♀], Segovia R., Honduras; R. RIDGWAY, P. U. S. Nat. Mus. 1888, pp. 590 & 591.

Trochilus violajugulum, n. sp., near *T. anna* and *T. alexandri*, Sta. Barbara, California; J. A. JEFFRIES, Auk, 1888, pp. 168 & 169.

CYPSELIDÆ.

Nesting of Indian species; H. E. BARNES, J. Bomb. N. H. Soc. iii, pp. 43-48.

Collocalia natalis, n. sp., near *C. neglecta*, Christmas I., Indian Ocean ; J. J. LISTER, P. Z. S. 1888, p. 520. *C. nidifica*, the nest re-asserted to be composed of an Alga (new evidence) ; H. PRYER, Auk, 1888, p. 335 : [*C. fuciphaga*], an account of the nesting caves in N. Borneo ; D. D. DALY, P. Z. S. 1888, pp. 108-116 : observations on the nest ; J. B. STEERE, Am. Nat. 1888, pp. 622-626 & 779-784.

Cypseloides niger, description of nest and eggs ; M. H. GORMLEY, Auk, 1888, pp. 424 & 425.

Cypselus shelleyi [♂], n. sp., Dembi, Shoa ; *C. myoptilus* [♀ juv.], n. sp., Let-Marefià, Shoa ; T. SALVADORI, Ann. Mus. Genov. xxvi, pp. 227-229. *C. melba*, *C. pallidus* figured ; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xlii.

Dendrochelidon coronata, nest figured ; H. E. BARNES, J. Bomb. N. H. Soc. iii, No. 1.

CAPRIMULGIDÆ.

Chordeiles popetue chapmani, n. subsp., Florida to Texas ; E. COUES, Auk, 1888, p. 37.

Nyctidromus albicollis merrilli, n. subsp., S. Texas, N. Mexico ? ; G. B. SENNETT, t. c. pp. 44-46.

Otophanes mcleodi, n. g. & sp. [♀], Province of Chihuahua, Mexico ; W. BREWSTER, t. c. pp. 88-90.

Podargus ocellatus figured ; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxiv.

ALCEDINIDÆ.

Alcedo ispida figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. viii.

Alcyon pulchra, notes on nesting ; A. J. NORTH, P. Linn. Soc. N.S.W. pp. 269 & 270.

Halcyon pileatus, its nest and eggs described from Corea ; L. TACZANOWSKI [J. Kalinowski], P. Z. S. 1888, pp. 462 & 463. *H. vagans* [ad. and juv.] figured ; W. L. BULLER, Birds New Zealand, pl. xiii.

Tanyptera microrhyncha figured ; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxiv.

BUCEROTIDÆ.

Lophoceros damarensis, n. sp. [= *Tockus (Buceros) erythrorhynchus* of Gurney & Sundev.], Damaraland ; *Buceros nasutus* var. *dubius* [cf. Zool. Rec. xxii, Aves, p. 49], = *Lophoceros pallidirostris* ; G. E. SHELLEY, Ibis, 1888, pp. 64-67.

UPUPIDÆ.

Upupa epops figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. vii.

MEROPIDÆ.

Merops apiaster figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. ix.

TODIDÆ.

The family, *sub voce* "Tody"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiii.

Todus viridis figured ; *id. ibid.*

CORACIIDÆ.

Coracias garrula said to have laid an egg in the nest of *Columba palumbus* : —. HOCKE, J. f. O. 1888, p. 107.

TROGONIDÆ.

The family, *sub voce* "Trogon"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiii.

Harpactes whiteheadi, n. sp. [♂ ♀], Kina Balu Mt., N. Borneo ; R. B. SHARPE [J. Whitehead], Ibis, 1888, pp. 395 & 396, pl. xii.

RHAMPHASTIDÆ.

The family *sub voce* "Toucan"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiii.

Megalæma pulcherrima, n. sp. [♂ ♀], Kina Balu Mt., N. Borneo ; R. B. SHARPE [J. Whitehead], Ibis, 1888, pp. 393 & 394, pl. xi, fig. 2. *M. sub-sulphurea*, not *M. leucolæma*, is the Liberian bird (a correction) ; J. BÜTTIKOFER, Notes Leyd. Mus. x [1888], pp. 94 & 95 [*cf. op. cit.* vii, p. 216, and viii, p. 263.]

INDICATORIDÆ.

Indicator emini [♂], n. sp., Wadelai, Equat. Africa ; G. E. SHELLEY, P. Z. S. 1888, p. 43, pl. iii.

CUCULIDÆ.

Cucumantis inasperatus, a supposed egg : G. HURST, P. Linn. Soc. N.S.W. iii [1888], pp. 421 & 422.

Chrysococcyx lucidus [ad. & juv.] figured ; W. L. BULLER, Birds New Zealand, pl. xv.

Coccyzus, notes on the geographical distribution, 7 species being recognized, with 2 subspecies of *C. jacobinus*, viz., *C. hypopinaris* and (p. 407) *C. caroli*, n. subsp., Danger R., Gaboon ; G. C. NORMAN, Ibis, 1888, pp. 396-409.

Coccyzus erythrophthalmus, *C. americanus*, *Coccyzus glandarius* figured ; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pts. xxxviii & xxxix.

Oculus poliocephalus new to Borneo ; R. B. SHARPE [J. Whitehead], Ibis, 1888, pp. 394 & 395.

Eudynamis mindanensis sanghirensis, n. subsp., Great Sanghir I. [Celebes Sea] ; W. BLASIUS, Braunsch. Anz. 1888, No. 9 (Jan. 11th), p. 86, and Ornith., 1888, pp. 566-569. *E. taitensis* [ad. & juv.] figured ; W. L. BULLER, Birds New Zealand, pl. xiv. *E. orientalis*, notes ; young similar in colour to the male ; J. WHITEHEAD, Ibis, 1888, pp. 409-411

Hierococcyx bocki new to Borneo ; R. B. SHARPE [J. Whitehead], *l. c.* p. 394.

Microdynamis parva figured ; *id.* [J. Gould], Birds New Guinea, pt. xxiv.

Nesocentor milo figured ; *id. op. cit.* pt. xxv.

MUSOPHAGIDÆ.

The family, *sub voce* "Touraco" ; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiii.

Turacus albicristatus figured ; *id. ibid.*

PSITTACI.

BIGNON, F. Recherches sur les cellules aériennes cervico-céphaliques chez les Psittacidés. Bull. Soc. Z. Fr. 1888 [xiii], pp. 180 & 181. [*Cf.* Zool. Rec. xxiv, Aves, p. 5.]

The above apparatus is proved to exist, to different extents, in *Ara militaris*, *Cacatua leadbeateri*, *C. alba*, *C. molluccensis*, *Chrysotis æstivus* and *Coracopsis vasa*.

RIDGWAY, R. Review of the Genus *Psittacula*. P. U. S. Nat. Mus. 1887, pp. 529-548.

An exhaustive account, with a key to the species. [See below.]

— Supplementary Remarks. Auk, 1888, pp. 460-462.

Psittacula insularis [♂ ♀], Tres Marias Is., W. Mexico ; *P. exquisita* [♂ ♀], Atlantic Coast of Columbia ; *P. deliciosa* [♂ ♀], Diamantina Creek, Lower Amazon, n. spp. ; *P. passerina rivida*, Bahia, *P. celestis lucida*, "Colombia," n. subsp. ; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 541-542, 542-543, 545-546, 539, 538, respectively.

Psittacula exquisita, Ridgw., = *P. spengeli* ; *P. deliciosa*, Ridgw., possibly = *P. cyanochlora* (Natt. MS.) ; G. HARTLAUB, Ibis, 1888, pp. 493 & 494 ; R. RIDGWAY, Auk, 1888, p. 461.

Charmosyna stellæ figured ; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxiv.

*Lorius flavo-palliatu*s figured ; *id. ibid.* *L. tibialis* figured ; *id. op. cit.* pt. xxv.

Nasiterna aolæ [♂ ♀], n. sp., Guadalcanar, Solomon Archipelago ; W. R. OGILVIE-GRANT, P. Z. S. 1888, p. 189, pl. x, figs. 1 & 2.

Nestor meridionalis (Kaka Parrot and var. "Kaka-Kura"), *N. notabilis* figured; W. L. BULLER, Birds New Zealand, pls. xvii & xviii.

Platycercus auriceps, *P. novæ zeelandiæ*, *P. alpinus* figured; *id. t. c.* pl. xvi: abnormal coloration of the first; T. W. KIRK, Tr. N. Z. Inst. 1885 [xviii] pp. 129-130. *P. pennanti nigrescens*, n. subsp., Bellenden-Ker Range, Queensland; E. P. RAMSAY, Tab. List Austr. Birds, pp. 34 & 35.

Prioniturus cyaneiceps, n. sp. [♂], near *P. discurus*, Paláwan I.; R. B. SHARPE, Ibis, 1888, p. 194. *P. platenæ*, n. sp. [♂ ♀], Paláwan I.; W. BLASIUS, Braunsch. Anz. 1888, No. 37 (Feb. 12th), p. 335, and Ornith., 1888, p. 305.

Psittacula, cf. *supra*.

Stringops habroptilus figured; W. L. BULLER, Birds New Zealand, pl. xix.

STRIGES.

The order, see FISHER, A. K.

BEDDARD, F. E. On the Classification of the *Striges*. Ibis, 1888, pp. 335-344, 7 cuts.

Basing his remarks with respect to the pterylography and osteology on Nitzsch and A. Milne-Edwards, with whom he appears to agree entirely, the author of this paper gives several additional particulars to confirm the division of the *Striges* into *Strigidae* and *Bubonidae*. These consist of differences (1) in the prefrontal processes of the ethmoid (swollen in *Strix*), (2) in the relative lengths of the phalanges of the 3rd digit (more equal in *Bubo*, &c.), (3) in the dissimilar method of division of the *tensor palatii brevis*, (4) in the incomplete structure of the syrinx and in the attachment of its intrinsic muscles. He agrees with Milne-Edwards in considering *Photodilus* to be a form intermediate between the two groups, its osteology being that of *Bubo*, its pterylosis that of *Strix*, while *Heliodilus* comes nearer to the latter.

LATASTE, F. Analyse Zoologique de pelotes de réjections de Rapaces Nocturnes. C.R. Ass. Fr. Sci. 1888, p. 194.

—. Analyse Zoologique de Pelotes de réjections de Rapaces Nocturnes. Ann. Mus. Genov. xxvi, pp. 471-518.

On examining 20 "lots," no remains of Batrachians or Reptiles were found, and few of Insects or Birds, while those of Mammals composed nearly the whole.

GADEAU DE KERVILLE, H. Faut-il détruire nos Rapaces Nocturnes? Bull. Soc. Rouen, 1888, pp. 247-260.

After consideration of the food of Owls and examination of their pellets, the writer would only allow one species to be destroyed—"Hibou Grand-Duc."

Glaucidium, notes on the habits, nests, and eggs of 2 species and 2 subspecies in America; C. E. BENDIRE, Auk, 1888, pp. 366-372. *G. gnoma*

haskinsi, n. subsp., Lower California; W. BREWSTER, *t. c.* p. 136.
G. passerinum figured; E. H. GIGLIOLI & A. MANZELLA, *Icon. Avif.*
Ital. pt. xl.

Megascops aspersus [♀ ad. and juv.], *M. vinaceus* [♀], n. spp., Province
 of Chihuahua, Mexico; W. BREWSTER, *Auk*, 1888, pp. 87 & 88.

Ninox albaria, n. sp., Lord Howe I.; E. P. RAMSAY, *Tab. List Austral.*
Birds, p. 37. *N. granti* [♂ ♀], n. sp., Guadalcanar, Solomon Archipelago;
 R. B. SHARPE, *P. Z. S.* 1888, pp. 183 & 184. *N. macroptera*, n. sp.
 [♂ ♀], = *Noctua hirsuta*, of Schlegel, = *N. scutulata*?, of A. B. Meyer,
 [cf. *Zool. Rec.* xxi, *Aves*, p. 56], Great Sanghir I. [Celebes Sea]; W.
 BLASIUS, *Braunsch. Anz.* 1888, No. 9 (Jan. 11th), p. 86, and *Ornis*, 1888,
 pp. 545 & 555. *N. natalis* [♂], n. sp., near *N. forbesi*, Christmas I., Indian
 Ocean; J. J. LISTER, *P. Z. S.* 1888, pp. 525-527.

Sceloglaux albifacies figured; W. L. BULLER, *Birds New Zealand*, pl. xx.

Scops fuliginosa, n. sp., near *S. umbratilis*, Paláwan I. [= *S. everetti*];
 R. B. SHARPE, *Ibis*, 1888, p. 197. *S. luciae* [♂ ♀], n. sp., near *S. rufescens*,
 Kina Balu Mt., N. Borneo; *id. t. c.* p. 478. *S. scapulatus*, n. sp. [♂],
 I. of St. Thomas, W. Africa; J. V. BARBOZA DU BOCAGE, *J. Sci. Lisb.*
 1888 [xlviii], p. 229. *S. obsoletus*, Cab., is posterior to *S. brucei* (Hume);
 J. H. GURNEY, *Ibis*, 1888, p. 145.

Spiloglaux novæ-zealandiæ figured; W. L. BULLER, *Birds New Zealand*,
 pl. xx.

Syrnium whiteheadi, n. sp. [♂], near *S. sinense*, Paláwan I.; R. B.
 SHARPE, *Ibis*, 1888, pp. 196 & 197, pl. iii. *S. wiepkeni*, n. sp. [♂ ♀],
 Paláwan I.; W. BLASIUS, *Braunsch. Anz.* 1888, No. 52 (Mar. 1st), p. 467,
 and *Ornis*, 1888, pp. 304 & 305. The two species stated to be identical,
 and priority claimed for the latter; *id. Ibis*, 1888, p. 372. *S. nebulosum*,
 feeding habits of young; H. J. RODDY, *Auk*, 1888, p. 248.

ACCIPITRES.

FALCONIDÆ.

Fossil remains (new species), see PORTIS, A.

Wie fängt man Raubvögel? EDD. *MT. orn. Ver.* Wien, 1888,
 pp. 12-14, 11 figs.

Different kinds of traps.

Two Eagles fighting, with photograph from a Japanese original; FREI-
 FRAT V. ULM-ERBACH, *t. c.* p. 18.

The family, see FISHER, A. K. [food], MANN, T. J.

Feeding-habits of the young; H. J. RODDY, *Auk*, 1888, pp. 246-248.

Sur les procédés de chasse employés par les rapaces; L. MAGAUD
 D'AUBUSSON, *Le Nat.* 1888, p. 175, fig.

Vulturidæ, sub voce "Vulture"; A. NEWTON, *Encycl. Brit.* ed. 9,
 vol. xxiv.

Accipiter büttikoferi, n. sp. [= *A. hartlaubi* of Büttikofer's first paper,
suprà], Liberia; R. B. SHARPE, *Notes Leyd. Mus.* x [1888], pp. 199 &

200. *A. velox rufilatus*, n. subsp., W. of N. America; note on *A. cooperi mexicanus*; R. RIDGWAY, P. U. S. Nat. Mus. 1888, p. 92.

Esalon regulus figured; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pt. xliii.

Aquila, see MENZBIER, M.

Astur oenochroides [♂ ad., ♀ juv.] figured; *id.* [N. A. Severzoff (the late)], Orn. du Turkestan, pl. iii. *A. holomelas* [♂], *A. woodfordi* [♂], *A. shebae* [♂ ♀], n. spp., Guadalcanar, Solomon Archipelago; R. B. SHARPE, P. Z. S. 1888, pp. 182 & 183.

Baza leucopais, n. sp. [♀ juv.], near *B. sumatrensis*, Palawan I.; *id.* Ibis, 1888, pp. 195 & 196. *B. gurneyi* figured; *id.* [J. Gould], Birds New Guinea, pt. xxv.

Buteo fuliginosus, a second specimen from U. S.; W. E. D. SCOTT, Auk, 1888, p. 185. *B. lagopus* said to breed in Silesia; K. KNAUTH, J. f. O. 1888, p. 15.

Cerchæus naumanni, *C. respertinus* figured; E. H. GIGLIOLI & A. MANZELLA, Icon. Avif. Ital. pts. xxxix & xl. *C. swainsoni*, *C. cyaneus*, *C. cineraceus* figured; *id. op. cit.* pts. xli & xlii.

Circus gouldi [ad. and juv.] figured; W. L. BULLER, Birds New Zealand, pt. xxi.

Elanus ceruleus, eggs figured; H. E. BARNES, J. Bomb. N. H. Soc. iii, No. 4.

Falco babylonicus [♀] figured; M. A. MENZBIER [N. A. Severzoff (the late)], Orn. du Turkestan, pl. vii. *F. rusticolus gyrfalco*, its varieties; E. W. NELSON, Rep. Nat. Hist. Alaska, pp. 146-197. *F. tinnunculus* in America (Massachusetts); O. B. CORY, Auk, 1888, p. 110, *cf.* p. 205.

Gypagus papa figured; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiv.

Haliaetus branickii [♀], n. sp., near *H. pelagicus*, Tsiempion, Corea; L. TACZANOWSKI [J. Kalinowski], P. Z. S. 1888, pp. 451-453, 2 cuts.

Harpa novæ-zealandiæ [ad. and juv.] figured; W. L. BULLER, Birds New Zealand, pl. xxii.

Harpyia destructor figured (not cold.); A. GÖRING, Monat. Schutze Vogelw. 1888, pp. 44 & 45, pl. i.

Harpyopsis novæ guineæ figured; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxv.

Hierofalco hendersoni [♀] figured; M. A. MENZBIER [N. A. Severzoff (the late)], Orn. du Turkestan, pl. vi.

Pandion haliaëtus in Barbadoes; H. W. FEILDEN, Zool. 1888, pp. 303 & 304.

Pernis apivorus new to Sardinia; C. LEPORTI, Atti (Rend. Mem.) Soc. Mod. Mem. (3) vii, pp. 73-80.

Polioaëtus ichthyaëtus (Horsf.), from Philippine Is.; J. H. GURNEY, Ibis, 1888, p. 145.

Spilornis melanotis, eggs figured; H. E. BARNES, J. Bomb. N. H. Soc. iii, No. 4.

Urospizias natalis [ad. and juv.], n. sp., near *U. griseigularis*, Christmas I., Indian Ocean; J. J. LISTER, P. Z. S. 1888, pp. 523-525.

CATHARTIDÆ.

The family, *sub voce* "Vulture"; A. NEWTON, *Encycl. Brit.* ed. 9, vol. xxiii.

Cathartes aura, feeding habits of young; H. J. RODDY, *Auk*, 1888, pp. 245 & 246: its sense of smell; C. L. HOPKINS, *t. c.* pp. 248-251.

STEGANOPODES.

Osteology of the order, see SHUFELDT, R. W.

PHAETHONTIDÆ.

The family, *sub voce* "Tropic-bird"; A. NEWTON, *Encycl. Brit.* ed. 9, vol. xxiii.

PELECANIDÆ.

Pelecanus erythrorhynchus, feeding habits; N. S. GOSS, *Auk*, 1888, pp. 25-27; see also KOCH, A. *P. sharpii* in Austro-Hungary, &c.; S. v. WASHINGTON, *Ann. Hofmuseum Wien*, iii, pp. 63-72, cut [*cf.* *Zool. Rec.* xxiii, *Aves*, p. 20]; V. v. TSCHUSI ZU SCHMIDHOFFEN, *MT. orn. Ver. Wien*, 1888, p. 80.

SULIDÆ.

Sula gossi [♂ ♀], *S. brewsteri* [♂ ♀], n. spp., San Pedro Martir Isle, Gulf of California; N. S. GOSS, *Auk*, 1888, pp. 241-243. *S. cyanops*, its eggs; E. P. RAMSAY, *P. Linn. Soc. N.S.W.* ii, p. 679. *S. dactylatra*, Lesson, and *S. nebozzii*, A. Milne-Edwards (cuts of both); EDD., *MT. orn. Ver. Wien*, 1888, pp. 33 & 34.

PHALACROCORACIDÆ.

Phalacrocorax, fishing in Japan; P. L. JOUY, *Am. Nat.* 1888, pp. 1-3. *P. carbo*, see PHILLIPS, E. C. *P. varius*, *P. imperialis*, *P. punctatus*, and *P. featherstoni* figured; W. L. BULLER, *Birds New Zealand*, pls. xxxviii & xxxix. *P. stictocephalus* in New Caledonia; E. L. LAYARD, *Ibis*, 1888, pp. 491 & 492. *P. dilophus cinctatus* [head], figured; E. W. NELSON, *Rep. Nat. Hist. Alaska*, p. 65, pl. ii, fig. 3.

PLOTIDÆ.

Plotus melanogaster, breeding habits, &c.; J. WHITEHEAD, *Ibis*, 1888, pp. 412 & 413. *P. parvus*, n. sp., from Post-tertiary deposits of Queensland; C. W. DE VIS, *P. Linn. Soc. N.S.W.* iii [1888], pp. 1286 & 1287, pl. xxxv, figs. 10a & 10b.

HERODIONES.

ARDEIDÆ.

BEDDARD, F. E. On certain Points in the Visceral Anatomy of *Balaniceps rex*, bearing upon its affinities. P. Z. S. 1888, pp. 284-290, 5 cuts.

Having examined the alimentary tract and syrinx of a specimen of the above bird, the author finds the latter very characteristic, and decidedly Ardeine in structure—thereby coming to the same conclusion at which Parker arrived from the osteology and Bartlett from the occurrence of powder-down patches. He considers *Balaniceps* as "a rather aberrant Heron, having no near affinities to the Storks nor to *Scopus*."

Ardea bahamensis, n. sp. [♂ ♀], near *A. virescens*, Rum Cay, Watling's I., Abaco, Bahamas; *A. virescens frazari*, n. subsp. [♂], La Paz, California; W. BREWSTER, Auk, 1888, pp. 83 & 84. *A. cinerea* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. viii. Essex Heronries; E. A. FITCH, Ess. Nat. 1888, pp. 171-186, cut & pl. *A. egretta*, *A. sacra* figured; W. L. BULLER, Birds New Zealand, pl. xxxvi.

Ardeiralla woodfordi [♂ juv., ♀], n. sp., Guadalcanar, Solomon Archipelago; W. R. OGILVIE-GRANT, P. Z. S. 1888, pp. 202 & 203.

Balaniceps, cf. *suprà*.

Botaurus pasciophilus figured; W. L. BULLER, Birds New Zealand, pl. xxxvii. *B. stellaris* figured; LORD LILFORD, Col. Figs. Br. Birds, pt. vii.

Butorides saturatus, n. sp., Swan I., Caribbean Sea; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 577 & 578.

Demiegretta jugularis = *D. greyi* of Gould; E. D. ATKINSON, Vict. Nat. v [1888], p. 120.

Herodias nigripes new to Great Sanghir I. [Celebes Sea]; W. BLASICH, Braunsch. Anz. 1888, No. 9 (Jan. 11th), p. 86, and Ornis, 1888, pp. 630 & 631.

Nycticorax mandibularis, n. sp. [= *N. manillensis*, Ramsay (*nec Vigors*)], Guadalcanar, Solomon Archipelago; W. R. OGILVIE GRANT, P. Z. S. 1888, pp. 203 & 204. *N. griseus* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. vii.

Tigrisoma excellens, n. sp., Segovia R., Honduras; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 595-597.

CICONIIDÆ.

Xenorhynchus asiaticus [Australia], nest and eggs; W. T. WHITE, P. R. Soc. Queensl. iii [1886], pp. 136-139. *X. nanus*, n. sp., from Post-tertiary deposits of Queensland; C. W. DE VIS, P. Linn. Soc. N.S.W. iii [1888], pp. 1287 & 1288, pl. xxxv, figs. 11a & 11b.

PLATALEIDÆ.

Ibis propinqua, Swinh., = *Ibis melanocephala* (Lath.); H. SEEBOHM, *Ibis*, 1888, pp. 473 & 474.

ODONTOGLOSSÆ.

PHÆNICOPTERIDÆ.

Phenicopterus roseus in Tunis [information rather behind date]; A. KOENIG, J. f. O. 1888, pp. 291-295.

ANSERES.

ANATIDÆ.

Fossil remains (new species), see PORTIS, A.

SHUFELDT, R. W. Observations upon the Osteology of the North American *Anseres*. P. U. S. Nat. Mus. 1888, pp. 215-251, 30 cuts.

A very full and important paper, containing, after preliminary remarks: (1) observations upon the osteology of *Mergus serrator*; (2) osteology of *Spatula clypeata*; (3) notes on a skull of *Branta canadensis hutchinsi*. The *Mergus* is compared with *Somateria dresseri*; the *Spatula* with *Glaucionetta islandica*.

MONTLEZUN, A. DE. Notes sur les Palmipèdes Lamellirostres, famille des anatidès. Sous-familles des Céréopsinés, Plectroptérinés, genres Céréopse, Plectroptère. Bull. Soc. Acclim. 1888, pp. 830-844, 2 cuts. [Cf. Zool. Rec. xxiv, *Aves*, p. 21.]

ROGERON, G. Croisements de Canards. T. c. pp. 918-923. [Cf. Zool. Rec. xxiii, *Aves*, p. 33.]

Nyroca robusta, *N. australis*, *Anas elapsa*, n. spp., *Dendrocygna validipennis*, from Post-tertiary deposits of Queensland; C. W. DE VIS, P. Linn. Soc. N S.W. iii [1888], pp. 1278-1283, pls. xxxiii & xxxiv (figs. 5a, 5b, 6).

Arctonetta fischeri, *Somateria v-nigra*, *Edemia americana*, *Æ. perspicillata* [heads], *Philacte canagica*, figured; E. W. NELSON, Rep. Nat. Hist. Alaska, pp. 76, 78, 80, 81, & 89, pls. iv & v (figs. 1, 2, 4, 5).

Ethya marila nearectica stated to have bred in Virginia; C. W. RICHMOND, Auk, 1888, p. 19: probably breeding in Oregon; J. C. MERRILL, t. c. p. 142.

Anas boscas [♂ ♀] figured; LORD LILFORD, Col. Fig. Br. Birds, pt. viii. *A. boscas domestica* × *Cairina moschata*; A. PICKLER, MT. orn. Ver. Wien, 1888, pp. 84-86. *A. boscas* × *A. superciliosa*; T. WHITE, Tr. N. Z. Inst. 1885 [xviii] pp. 134 & 135. *A. chlorotis* figured; W. L. BULLER, Birds New Zealand, pl. xlii. *A. wyvilliana*, further notes; L. STEJNEGER, P. U. S. Nat. Mus. 1888, pp. 98-101.

Anser erythropus stated to have been shot in Somerset; W. GYNGELL, Sci. Goss. 1888, p. 69; CECIL SMITH, t. c. p. 91; *ibid.* Zool. 1888, pp. 227-229.

Casarca variegata [♂ ♀] figured; W. L. BULLER, Birds New Zealand, pl. xliii.

Chloephaga magellanica, notes; G. ROGERON, Bull. Soc. Acclim. 1888, pp. 12-21.

Dafila acuta new to Hawaiian Is.; L. STEJNEGER, P. U. S. Nat. Mus. 1888, pp. 97 & 98.

Fuligula novæ-zealandiæ figured; W. L. BULLER, Birds New Zealand, pl. xlv.

Hymenolæmus malacorhynchus figured; *id. ibid.*

Mareca, sub voce "Wigeon"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiv.

Nesonetta aucklandica figured; W. L. BULLER, Birds New Zealand, pl. xlii.

Querquedula, sub voce "Teal"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiii. *Q. antarctica*, n. sp., near *Q. eatoni* (confounded with it—cf. J. f. O. 1884, p. 254), S. Georgia; J. CABANIS, J. f. O. 1888, p. 118, pl. i. *Q. carolinensis* [♂] in Devon; H. SAUNDERS, P. Z. S. 1888, p. 469. *Q. crecca* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. viii. *Q. discors* in Denmark [Säby]; O. WINGE, Ornith., 1888, pp. 412 & 413.

Rhynchaspis variegata [♂ ♀] figured; W. L. BULLER, Birds New Zealand, pl. xlv.

COLUMBÆ.

COLUMBIDÆ.

The art of Training Pigeons in the East. J. E. HARTING, Zool. 1888, pp. 167-174, 209-219, & 252-258. [From Blochmann's translation of Shaikh Abul Fazl's "Ain i Akbari," and from Alla oodeen's unpublished commentary on it.]

Un colombier militaire en mer; G. DE GUÉRARD, Bull. Soc. Acclim. 1888, pp. 309 & 310.

Columba domestica [anat.-phys.], see MAZZARELLI, G. F.

Carpophaga aenea palawanensis, n. subsp., Palawan I.; W. BLASIUS, Ornith., 1888, pp. 316 & 317. *C. everetti*, n. sp., near *C. pickeringi*, Mantanan, Borneo; W. R. OGILVIE-GRANT, Ann. N. H. (6) ii, pp. 351 & 352. *C. badia* new to Borneo; R. B. SHARPE [J. Whitehead], Ibis, 1888, p. 396. *C. novæ-zealandiæ*, remarkable variety; T. W. KIRK, Tr. N. Z. Inst. 1885 [xviii], p. 129; figured; W. L. BULLER, Birds New Zealand, pl. xxiv. *C. subflavescens*, *C. van-eychii* figured; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxv.

Chalcophaps natalis, n. sp., near *C. indica*, Christmas I., Indian Ocean; J. J. LISTER, P. Z. S. 1888, p. 522. *C. indica sanghirensis*, n. subsp., Great Sanghir I. [Celebes Sea]; W. BLASIUS, Braunsch. Anz. 1888, No. 9 (Jan. 11th), p. 86, and Ornith., 1888, pp. 623-625.

Columba guayaquilensis, n. sp., near *C. albilinea*, Guayaquil, Ecuador;

C. purpureolincolta, n. sp., Demerara, Brit. Guiana; R. RIDGWAY, P. U. S. Nat. Mus. 1887, p. 594, 1888, p. 112. *C. arquatrix thomensis*, n. subsp., I. of St. Thomas, W. Africa; J. V. BARBOZA DU BOCAGE, J. Sci. Lisb. 1888 [xlviii], pp. 230 & 231. *C. fasciata viosca*, n. subsp., Lower California; W. BREWSTER, Auk, 1888, pp. 86 & 87. *C. turtur*, range in Scotland; W. HASTINGS, Tr. Dumfries Soc. 1886-87, pp. 7 & 8.

Columbigallina passerina insularis, n. subsp., I. of Grand Cayman, Caribbean Sea; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 574 & 575.

Engyptila vinaceiventris, n. sp. [♂], Honduras (Truxillo); *id. t. c.* pp. 583 & 584.

Goura, Australian ancestry (fossils); C. W. DE VIS, P. R. Soc. Queensl. v [1888], pp. 127-131. These fossils are labelled *Progura gullinacea*.

Ianthenas albigularis figured; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxv.

Macropygia sanghirensis figured; W. BLASIUS, Ornith., 1888, pp. 619-623, pl. iii [♂? ♀ juv.].

Phlogothanas solomonensis [♂], n. sp. (or subsp. of *P. johannæ*?), Guadalcanar, Solomon Archipelago; W. R. OGILVIE-GRANT, P. Z. S. 1888, p. 200.

Treron nasica, notes; *id.* Ann. N. H. (6) ii, p. 352. *T. permagna* [cf. Zool. Rec. xxiii, Aves, p. 62], = *T. formosa*; H. SEEBOHM, Ibis, 1888, pp. 235 & 236.

Zenaidia jessica, n. sp. [♂], Diamantina, Lower Amazon; R. RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 527 & 528. *Z. noronhæ*, see RIDLEY, H. N.

PTEROCLIDÆ.

SYRRHAPTES PARADOXUS.

General.

TEGETMEIER, W. B. Pallas's Sand-Grouse (*Syrrhaptes paradoxus*): its history, habits, food, and migrations, with hints as to its utility, and a plea for its preservation. London: 1888, 8vo, 24 pp., 1 pl., 4 cuts.

CLARKE, W. E. Irruption of Pallas's Sand-Grouse. Naturalist, 1888, p. 170.

HARTING, J. E. The Recent Immigration of Pallas's Sand-Grouse. Life-Lore, 1888, pp. 25-27.

A popular account, with no special records.

NEWTON, A. On the Irruption of *Syrrhaptes paradoxus*. Rep. Br. Ass. 1888, p. 703.

MEYER, A. B. On the Reappearance of Pallas's Sand-Grouse (*Syrrhaptes paradoxus*) in Europe. Nature, xxxviii [1888], pp. 53-54, 77, & 342.

The first article calls attention to occurrences between April 21st and May 7th; the second and third continue the subject, with records from Central Europe between April 22nd and May 16th and from France.

[MEYER, A. B.] Note on the Bird's occurrence in 1874-78, 1883. *Op. cit.* xxxix, p. 9.

—. [On *Syrrhaptes paradoxus*.] Dredner Journal, May 2nd, 1888.

—. [On *Syrrhaptes paradoxus*.] Hugo's Jagdzeit. pp. 292 *et seq.*

—, & HELM, F. Anhang zum iii Jahresbericht orn. Beob.-stat. Sachsen, pp. 117-124.

BLASIUS, R. Skizze des Wandezuges der Steppenhühner (Fausthühner), *Syrrhaptes paradoxus*, Pall., durch Europa i J. 1888. Monat. Schutze Vogelw. 1888, pp. 373-377, pl. v.

*HOLTZ, L. Ueber das Steppenhuhn, *Tetrao paradoxus*, Pall., = *Syrrhaptes pallasi*, Temm., = *Syrrhaptes paradoxus*, Ill., und dessen Einwanderung in Europa, nebst Beobachtungen über dasselbe im Freileben und in der Gefangenschaft. Greifswald: 1888, 8vo, 31 pp.

SCHÄFF, E. Ueber den diesjährigen Wandezug der Steppenhühner. Zool. Gart. xxix [1888], p. 168.

—. Was haben wir von der Einbürgerung der Steppenhühner zu erwarten. *T. c.* pp. 353-359.

—. [Further Notes.] SB. ges. Nat. 1888, pp. 104-106.

Zur diesjährigen Einwanderung des Steppenhühnes; EDD., MT. orn. Ver. Wien, 1888, p. 158.

Rückblick auf die diesjährige Einwanderung des Steppenhühnes; F. KNAUER, *t. c.* pp. 141 & 142.

Notes on *Syrrhaptes paradoxus*; —. GOLDFUSS, Z. Naturw. (4) vii [1888], pp. 407, 408, 453, & 454; E. HUTH, MT. Ver. Frankfurt-a.-O. 1888, pp. 78-80.

Die Einwanderung des Steppenhuhns (*Syrrhaptes paradoxus*); K. RUSS. Gef. Welt, 1888, pp. 203, 204, & 215.

Weitere Mittheilungen über das Erscheinen des Steppenhuhns; *id. t. c.* pp. 215 & 216.

Ueber die Einwanderung des Fausthuhns; EDD. (from various sources), Monat. Schutze Vogelw. 1888, pp. 170 & 171.

Die zweite Einwanderung des Faust-oder Steppenhuhns (*Syrrhaptes paradoxus*); F. LINDNER, *t. c.* pp. 172-178.

Nachtrag; *id. t. c.* pp. 298 & 299 [and *cf.* p. 369].

Syrrhaptes paradoxus; J. PIETSCH, *t. c.* pp. 178-183.

Nahrung der Steppenhühner; EDD., Gef. Welt, p. 408 (*ex* Magdeburger Botan. Ver.).

LEVERKÜHN, P. Litterarisches über das Steppenhuhn. Monat. Schutze Vogelw. 1888, pp. 377-381.

This article contains, besides papers mentioned above, notices of the following nine :—

HOMER, A. v. Das Steppenhuhn (*Syrrhaptes paradoxus*) zum zweiten Male in Europa. Zeitsch. für Orn. und prakt. Geflüg. (Stettin) xii, No. 6, 8 pp.

HOMER, A. v. Was machen unsere Steppenhühner jetzt? *T. c.* No. 7, p. 108.

ZIEMER, E. Ornithologische Beobachtungen. No. 8. Monat. Schutze Vogelw. 1888, pp. 231-236.

STRUCK, C. Ueber Steppen-oder Fausthühner (*Syrhaptus paradoxus* Ill.) in Mecklenburg. Arch. Ver. Mecklenburg, xlii, pp. 175-183.

Including Nachtrag 1; while Nachtrag 2 is by J. F. SOLDAT, *t. c.* pp. 183 & 184.

DEYROLLE, E. [*Syrhaptus paradoxus* in France, Belgium, Minorca.] *La Nature*, xxxii, pp. 197 & 198.

In St. James' Gazette, June 2nd, 1888, p. 15, "On some rare Bird Visitors"; also *op. cit.* Aug. 25th, 1888, p. 20.

In Pall Mall Gazette, June 7th, 1888, p. 18, "The Invasion of the Sand-Grouse."

In The Times, June 6th, 1888, p. 5, "Pallas's Sand-Grouse" [the Foulden specimen, *cf. infra*].

In Le Nat. 1888, p. 161, fig. "Le *Syrhaptus paradoxus*."

PICAGLIA, L. Sopra una recente invasione del *Syrhaptus paradoxus*, Ill. Atti Soc. Mod. Mem. (3) vii, pp. 119-121.

Notes on *Syrhaptus paradoxus*; V. GASPARINI, Boll. del. Nat. 1888, pp. 83-85.

Un Oiseau à observer; R. MARTIN, Rev. Sci. Bourb. i, pp. 147 & 148, pl. viii.

BRUSINA, S. Ornitolozke bilješke za hrvatsku Faunu. Svezanj Prvi. No. 1. *Syrhaptus paradoxus*, pp. 1-12.

Syrhaptus paradoxus, notes on; N. ZARUDNOI, Bull. Mosc. 1888 (pub. 1889), pp. 662 & 663.

Great Britain.

HARTING, J. E. On the Re-appearance of Pallas' Sand-Grouse in the British Islands. Zool. 1888, pp. 233 & 234.

Noticing occurrences abroad, and those in Britain from May 18th to May 25th.

SOUTHWELL, T. Notes on the Occurrence of Pallas's Sand-Grouse in Norfolk. *T. c.* pp. 442-456.

The author calls attention to an overlooked occurrence in Norfolk, in 1876, and considers one case of breeding substantiated.

CORDEAUX, J. Notes on the Occurrence of Pallas's Sand-Grouse in Lincolnshire [in 1863 and 1888]. *T. c.* pp. 419-423.

No instances of nesting.

— Notes on the Occurrence of Pallas' Sand-Grouse in the Spurn District in the Spring of 1888. *Naturalist*, 1888, pp. 195-197.

1888. [VOL. XXV.]

c 10

MACPHERSON, H. A. Sand-Grouse in N.W. England. Tr. Cumberl. Westmorl. Ass. 1888, pp. 59-75.

CHASE, R. W. [Notes on Sand-Grouse.] Midl. Nat. 1888, pp. 186 & 187.

DRUMMOND-HAY, H. M. [Additional Notes on Orn. E. Scotland. Notes on Sand-Grouse.] Scot. Nat. 1888, pp. 348-350.

TRAIL, J. W. H. Editorial Note on Sand-Grouse. *T. c.* p. 297.

ABRAHAM, J. Das Steppenbuhn in Grossbritannien. Gef. Welt, 1888, p. 371.

In Saturday Review, Sept. 8th, 1888, pp. 281-288, "Pallas's Sand-Grouse."

Syrhaptes paradoxus in Outer Hebrides; J. W. P. CAMPBELL-ORDE, *Ibis*, 1888, p. 493.

" in Jersey, May 15th; H. E. DRESSER, *t. c.* p. 375.

" at Loughborough, May 24th; C. S. MILLARD, *ibid.*

" in co. Down (Hillough); R. L. PATTERSON, *ibid.*

" at Wellington, Somerset; W. A. SANFORD, *ibid.*

" in Holderness; R. P. HARPER, *Zool.* 1888, pp. 234 & 235.

" at Norwich (Mousehold Heath); E. J. ELDRED, *t. c.* p. 235.

" in Northants (Wadenhoe); LORD LILFORD, *t. c.* p. 462.

" in Fife; H. M. DRUMMOND-HAY, *t. c.* p. 468.

" in Warwickshire, Berks, and Oxon; O. V. APLIN, *t. c.* pp. 468 & 469.

" in Scotland (general); W. EVANS, *t. c.* pp. 262 & 263.

" at Anstruther, Fife; J. ROSS, *t. c.* pp. 263.

" at Scarborough; R. P. HARPER, *t. c.* p. 263.

" near Newmarket; W. MAYD, *t. c.* p. 263.

" at Downham; J. G. TUCK, *t. c.* p. 263.

" at Southwold, Aldeburgh, Bury; *id.* *t. c.* p. 263.

" at Blake Hall, Essex; A. F. GATES, *t. c.* p. 264.

" at Harwich; M. A. MATHEW, *t. c.* p. 264.

" at Thanet; H. S. D. BYRON, *t. c.* p. 264.

" at Hayling I.; W. JEFFERY, *t. c.* p. 264.

" near Aldershot, New Forest, Bournemouth, and Dorset; G. B. CORBIN, *t. c.* pp. 264, 265, 388, & 389.

" at Wareham; J. C. MANSEL-PLEYDELL, *t. c.* p. 265.

" in Isle of Man; P. M. C. KERMODE, *t. c.* p. 265, and T. H. NELSON, *t. c.* p. 300.

" in Cumberland; H. A. MACPHERSON, *t. c.* p. 265.

" at Ambleside, Pembr.; M. A. MATHEW, *t. c.* p. 265.

- Syrhaptes paradoxus* at Cheltenham ; F. DAY, *t. c.* pp. 265 & 266.
- „ at Steart L., Somersetsh. ; M. A. MATHEW & CECIL SMITH, *t. c.* p. 266.
- „ at Bridgewater, Somerset ; H. ST. B. GOLDSMITH, *t. c.* p. 266.
- „ at Hartland, Devon ; J. G. HAMLING, *t. c.* p. 266.
- „ in Guernsey ; CECIL SMITH, *t. c.* p. 266.
- „ at Heligoland ; J. CORDEAUX, *t. c.* p. 267.
- „ near Redcar ; T. H. NELSON, *t. c.* pp. 298 & 299.
- „ at Withernsea (7) ; F. R. FITZGERALD, *t. c.* p. 299.
- „ at Nidderdale, &c. ; R. FORTUNE, *ibid.*
- „ at Bishop Auckland ; T. H. NELSON, *ibid.*
- „ in Northumberland ; J. SUTTON, *t. c.* pp. 299 & 300.
- „ in Norfolk and Suffolk ; E. H. BUTLER, *t. c.* p. 300.
- „ at Durham and Winchester ; J. SUTTON, *ibid.*
- „ in Down ; — SHEALS, *ibid.*
- „ in Wexford ; R. T. USSHER, *t. c.* p. 301.
- „ at Valencia (Spain) ; LORD LILFORD, *ibid.*
- „ at Appledore, near Rye ; J. H. GURNEY, JUNR., *t. c.* p. 332.
- „ in Ireland ; R. F. SCHARFF, *t. c.* pp. 347 & 348.
- „ at Scarborough ; R. FORTUNE, *t. c.* p. 348.
- „ at Land's End ; T. CORNISH, *t. c.* p. 300.
- „ from Hoddesden, Herts (live specimen exhibited) ; P. L. SCLATER, P. Z. S. 1888, p. 291 [and F. M. CAMPBELL, *Nature*, xxxviii, p. 77].
- „ from Foulden, Berwick-on-Tweed (live specimen exhibited) ; *id. ibid.* [and *Nature*, xxxviii, p. 132].
- „ from Tiree, Argyleshire (2 live specimens exhibited) ; *id. t. c.* p. 413.
- „ at Rothbury, Northumberland ; A. NEWTON, *t. c.* p. 113.
- „ in Durham, Isle of Man, and Cleveland ; T. H. NELSON, *Naturalist*, 1888, pp. 121 & 122.
- „ in Derbyshire and Notts ; F. B. WHITLOCK, *t. c.* p. 221.
- „ at Borobridge, Yorks ; E. P. KNUBLEY, *t. c.* p. 222.
- „ at Wetwang-on-the-Wolds, Yorks ; E. M. COLE, *t. c.* p. 354.
- „ at Goxhill (Lincolnshire) ; J. W. HARRISON, *ibid.*
- „ at Flamborough ; M. BAILEY, *t. c.* p. 200.
- „ at Whitby ; T. STEPHENSON, *ibid.* [and p. 297].
- „ at Pickering ; H. PRODHAM, *ibid.*
- „ at Nidderdale ; R. PAVER-CROW, *ibid.*
- „ in Essex ; E. A. FITCH, *Ess. Nat.* 1888, pp. 61, 62, & 271.

- Syrrhaptes paradoxus* in Essex; W. CROUCH, *t. c.* p. 63.
 " at Clare, Suffolk; J. E. BARNES, *Field*, 1888,
 p. 854.
 " at Aldboro'; J. H. SALTER, *Nat. Hist. J.* 1888,
 p. 224.
 " at Fyvie (May 26th); G. SIM, *Scot. Nat.* 1888,
 p. 297, and W. SYM, *Sci. Goss.* 1888, p. 164.
 " at Bexhill; W. E. WINDUS, *t. c.* p. 188.
 " at Hayling I., Hants; W. JEFFERY, *ibid.*
 " at Yatton, Somerset; H. A. FRANCIS, *t. c.* p. 236.
 " at Arbroath; A. N. SIMPSON, *Scot. Nat.* 1888, pp.
 339 & 340.

For instances of breeding, *cf. infra*.

The Continent.

- CORDEAUX, J. Occurrence of Pallas' Sand-Grouse at Heligoland. *Naturalist*, 1888, pp. 197 & 198. (From Gatke, in Letter.)
 ROSENBERG, H. v. Das Sandhuhn in Holland. *MT. orn. Ver. Wien*, 1888, p. 150.
 PFANNENSCHMID, E. Das Steppenhuhn auf seiner Wanderung durch Ostfriesland. *Monat. Schutze Vogelw.* 1888, pp. 296 & 297.
 MARTENS, E. v. *Syrrhaptes paradoxus* in Deutschland. *SB. Ges. Nat.* 1888, pp. 85-87.
 STRUCK, C. [See p. 81.]

ALTUM, —. Zur Systematischen Stellung des Steppenhuhns. *Gef. Welt.* 1888, pp. 351-353.

RUSS, K. Die Einbürgerungsfähigkeit des Steppenhuhns. *T. c.* p. 319.

— . Zur näheren Kenntniss des Steppenhuhns. *T. c.* pp. 245 & 246.

HOMER, A. v. [See p. 81.]

CERNEL, J. A pusztai talpas-tyúk ez idei megjelenése hazánkban. *Termes Kőzlöny*, xx, pp. 449-457.

CERNELHÁZA, S. C. v. Zum heurigen Erscheinen der Steppenhühner (*Syrrhaptes paradoxus*, Pall.), in Ungarn. *MT. orn. Ver. Wien*, 1888, pp. 157 & 158.

EDITORS. Einwanderung des Steppenhuhns (*Syrrhaptes paradoxus*, Pall.). *T. c.* pp. 86 & 87.

TALSCH, J. Das Steppenhuhn und der Tannenheher im Jahre 1888 in Mähren. *T. c.* pp. 170 & 171.

TACZANOWSKI, L. [*Syrrhaptes paradoxus* in Poland (from *Liste des Oiseaux de Pologne*).] *Ornis*, 1888, pp. 485 & 486.

The first instance of the bird's occurrence in Europe in 1888 is here noted.

MEYER, A. B. Ueber das Vorkommen des Steppenhuhns in Bulgarien. *Hugo's Jagdzeit.* 1888, pp. 685-686.

BUREAU, L. Sur les passages du Syrrhapte paradoxal (*Syrrhaptus paradoxus*) dans l'ouest de la France. Mém. Soc. Z. Fr. 1888 [1], pp. 245-252.

VIAN, J. Retour du Syrrhapte paradoxal en France. Bull. Soc. Z. Fr. 1888 [xiii], pp. 154-156.

DUCLUX, L. Migration de *Syrrhaptus* en France. Bull. Soc. Acclim. 1888, p. 665.

SALVADORI, T. Il Sirratte in Italia nella primavera del 1888. Boll. Mus. Zool. Anat. Comp. Torino, iii [1888], No. 47, 6 pp.

———. Altre Notizie intorno al Sirratte in Italia nel 1888. T. c. No. 52, 5 pp.

Syrrhaptus paradoxus at Stock, Pilica R., near Warsaw; L. TACZANOWSKI, Fly Leaf of Ornis, pt. 2, 1888.

„ in Transylvania (April 27th); J. V. MADARÁSZ, Ibis, 1888, p. 375.

„ in Listerland, S. Norway (May 12th); R. COLLETT, *ibid.*

„ in Holland; F. E. BLAAUW, *ibid.* [cf. The Times, May 23rd, 1888].

„ in Norway (Røraas, April); A. H. COCKS, Zool. 1888, p. 425.

„ in Bornholm, Denmark, Sweden, Norway; Ed., Nature, xxxviii, p. 132.

„ in Denmark; J. S. WOOD, Naturalist, 1888, p. 200.

„ in Belgium; E. DE SELYS-LONGCHAMPS, Bull. Ac. Belg. xv [1888], pp. 242-246.

„ in Dept. Somme; L. MAGAUD D'AUBUSSON, Bull. Soc. Acclim. 1888, pp. 666 & 667.

„ at Dunkirk; C. V. KEMPEN, Bull. Soc. Z. Fr. 1888[xiii], pp. 145 & 146; at Vian, pp. 154 & 155.

„ at Paunsdorf, Leipzig; E. REY, Fly Leaf of Ornis, pt. 2, 1888.

„ in Upper Austria; R. KARLSBERGER, Monat. Schutze Vogelw. 1888, p. 250.

„ at Wurtzen; K. T. LIEBE, t. c. p. 282.

„ at Anklam; R. TANCRÉ, MT. orn. Ver. Wien, 1888, pp. 108 & 109, cut.

„ at Borkum; O. HILDEBRANDT, Gef. Welt, 1888, p. 407.

„ in Norway; K. KRÖGELBEIN, t. c. pp. 257 & 258.

„ in Schleswig-Holstein; K. RUSS, t. c. pp. 235 & 236.

„ in Juist I., Hanover; *id.* t. c. pp. 247 & 248.

„ in Pomerania (Wollin I.); *id.* t. c. pp. 309 & 310.

„ at Dannewerk, near Sleswig; *id.* Kieler Zeitung. Aug. 1888.

AVES.

- adoxus* at Albufera de Valencia (June); J. ARÉVALO,
Rev. Cien. Madrid, xxii, pp. 373-376.
" at Mantua, L. Picaglia, Il Panaro, xxvii, No. 160.
" at Trieste; A. VALLE, Boll. del Nat. 1888, p. 105.
" at Padua; C. DEL FIUME, Il Panaro, xxvii,
No. 160.
" at Bellaria; E. GALLAROTTI, *ibid.*
" at Cervarese; D. STEFANONI, *t. c.* p. 156.
" at Verona; — DAL NERO, *t. c.* p. 164.
" at Brescia; E. METTICA, *ibid.*
" in Provence; P. SIEPL, *ibid.*
" at Upsala, Göteborg; Norsk. Jaeger-og Fisker
Tidsskrift, 1888, June-Aug.

Reported Instances of Breeding.

- June. In England; A. B. MEYER & F. HELM, iii, Jahresb. Sachsen,
p. 123.
At Freia in Sleswig-Holstein (nest and eggs); *iid. ibid.*
At Föhr I. (several pairs); *iid. ibid.*
At Rodenkirchen, Oldenburg (nest and eggs); *iid. ibid.*
In Sleswig-Holstein (several nests with 4-5 eggs); *iid. ibid.*
In N. Holland (Schoorl and Terschelling I.); *iid.* p. 124.
June 8th. At Schönebeck, Saxony (nest and eggs); *iid. ibid.*
July 9th. At Wegeleben, near Halberstadt (nest and 4 young); *iid.*
ibid.
In E. Scotland (young found); H. M. DRUMMOND-HAY,
Scot. Nat. 1888, pp. 348-350.
In Durham County; S. L. MOSLEY, Zool. 1888, p. 348.
In Norfolk; E. A. BUTLER, Zool. 1888, p. 300.
At Settle, in Yorkshire (nest and 3 eggs); J. HARDING,
Wesley Nat. 1888, p. 235.
In Sylt; H. BÜNGER, Monat. Schutzv. Vogelw. 1888, p. 369.
In Germany; K. T. LIEBE, *t. c.* pp. 306 & 307.
" E. SCHÄFF, Gef. Welt. 1888, p. 353.
Nesting in General; K. RUSS, *t. c.* p. 236.

GALLINÆ.

TETRAONIDÆ.

Colinus nigrogularis segoviensis, n. subsp., Segovia R., Honduras; R.
RIDGWAY, P. U. S. Nat. Mus. 1887, pp. 593 & 594.

Dendragapus canadensis, notes; W. H. FISHER, J. Cincinn. Soc. x,
pp. 205 & 206.

Lagopus bonasioides ♂ (new hybrid) described at length; G. KOLT-
HOFF, Bih. Sv. Ak. Handl. xiii, No. 6, 7 pp., pl. *L. lagopus* [head]. L.

rupestris nelsoni, figured; E. W. NELSON, Rep. Nat. Hist. Alaska, pp. 131 & 138, pl. v, fig. 3 & pl. x. *L. mutus* [summer (pair), autumn, winter (pair)] figured; LORD LILFORD, Col. Fig. Br. Birds, pt. ix.

Tetrao tetriz figured; *id. t. c.* pt. vii. *T. marmorata*, *T. cristata*, *T. guttata*, n. spp., S. Mexico (Popocatepec), N. Mexico (Mezquital), and near S. Mexico respectively; P. DE LA LLAVE, Nat. Mex. vii [1885-86], pp. 63-65. *T. medius*, probably $\frac{3}{4}$ *T. tetriz* $\frac{1}{4}$ *T. urogallus*; V. V. TSCHUSI ZU SCHMIDHOFFEN, Ornith., 1888, pp. 517-526, pl. ii.

PHASIANIDÆ.

The family, see GODRY, É.

SHUFELDT, R. W. Observations upon the Morphology of *Gallus bankiva* of India. (Including a complete account of its skeleton.) J. Comp. Med., Oct. 1888, 34 pp., 30 figs.

The subjects of investigation were two "wild-shot" Birds from Jubbulpore [♂ ♀]; and while the results do not seem to differ essentially from those attained by other naturalists, they are of great interest, and are worked out fully and carefully.

Agelastes meleagrides, coloration re-described; J. BÜTTIKOFER, Notes Leyd. Mus. x [1888], pp. 98 & 99.

Cucubus rufa figured; LORD LILFORD, Col. Fig. Br. Birds, pt. viii.

Coturnix novæ-zealandiæ [♂ ♀] figured; W. L. BULLER, Birds New Zealand, pl. xxiii.

Francolinus spilogaster [♂] n. sp., Harar, E. Africa; *F. castaneicollis* [♀] n. sp., Lake Ciar-Ciar, Shoa district; T. SALVADORI, Ann. Mus. Genov. xxvi, pp. 541 & 542.

Lobiophasis bulweri, its range, with other details; W. H. TREACHER, Ibis, 1888, pp. 413-415.

Meleagris, *sub voce* "Turkey"; A. NEWTON, Encycl. Brit. ed. 9, vol. xxiii.

Perdix, see DUCLOS, G. *P. cinerea* figured; LORD LILFORD, Col. Fig. Br. Birds, pt. ix. *P. montana*, Brisson [a note]; L. PETIT, Bull. Soc. Z. Fr. 1888 [xiii], p. 216.

Phasianus persicus talischensis, Talisch, Lenkoran; *P. colchicus septentrionalis*, N. of Caucasus; T. LORENZ, J. f. O. 1888, pp. 571 & 572. *P. torquatus* and its allies; H. SEEBOHM, Ibis, 1888, pp. 312-316. *P. vlangali*, *P. strauchi*, *P. shawi*, *P. tarimensis*, note on synonymy, &c.; *P. satche-unensis* = *P. shawi*; *id.* P. Z. S. 1888, pp. 267 & 415. [Cf. Zool. Rec. xxi, Aves, p. 63.]

CRACIDÆ.

Ortalis, see DELAURIER, A.

MEGAPODIIDÆ.

Megapodius brenchleyi, notes; C. M. WOODFORD, P. Z. S. 1888, pp. 249 & 250. *M. cumingi*, nesting habits; J. WHITEHEAD, Ibis, 1888, pp. 411 & 412.

TURNICIDÆ.

Turnix haynaldi, n. sp. [♂ ♀], Paláwan I.; W. BLASIUS, Ornith., 1888, pp. 317 & 318.

OPISTHOCOMI.

OPISTHOCOMIDÆ.

Opisthocomus cristatus, its habits, nesting, anatomy, and wing-formation; C. G. YOUNG, Notes Leyd. Mus. x [1888], pp. 169-174, pl. viii [anatomy of young and egg]: breeding habits, &c.; — QUELCH [a letter], Ibis, 1888, pp. 378 & 379.

FULICARIÆ.

RALLIDÆ.

Fossil remains (new species), see PORTIS, A.

SHUFELDT, R. W. Osteology of *Porzana carolina*. J. Comp. Med., July, 1888, 16 pp., 7 figs.

The author treats—1, of the Skull (3 figs.); 2, of the remainder of the Axial Skeleton (2 figs.); 3, of the Appendicular Skeleton. He then recapitulates the 17 chief characters.

PARKER, T. J. Notes on a Skeleton of *Notornis*, recently acquired by the Otago University Museum. Tr. N. Z. Inst. 1885 [xviii], Art. x, pp. 78-82.

Found by R. Henry, near Lake Te Anau.

Porphyrio? reperta, *Gallinula strenuipes*, *Fulica prior*, n. spp., from Post-tertiary deposits of Queensland; C. W. DE Vries, P. Linn. Soc. N.S.W. iii [1888], pp. 1283-1286, pls. xxxiv (figs. 7a, 7b, 8a, 8b) & xxxv (figs. 9a, 9b).

Aramides plumbeicollis, n. sp., Jiménez; J. C. ZELEDON, An. Mus. Costa Rica i [1887], p. 131; cf. *op. cit.* ii, p. 3.

Euryzona euryzonoides, notes on the type specimen, &c.; L. STEJNEGER, P. Bost. Soc. xxiii, pp. 461-463.

Gallinula, sp. indet., from St. Denys, North of Seychelles; E. NEWTON, Tr. Norw. Soc. iv, p. 552.

Gymnocrex plumbeiventris figured; R. B. SHARPE [J. Gould], Birds New Guinea, pt. xxiv.

Ionornis martinica, its breeding habits, &c.; A. T. WAYNE, Auk, 1888, pp. 109 & 110.

Notornis, cf. *suprà*. *N. mantelli* figured; W. L. BULLER, Birds New Zealand, pl. xxxii.

Ocydromus australis, *O. brachypterus*, figured; *id. t. c.* pl. xxxv. *O. greyi*, *O. fuscus*, figured; *id. t. c.* pl. xxxiv.

Ortygometra tabuensis figured; *id. t. c.* pl. xxxiii.

Porphyrio melanotus and var. figured; *id. t. c.* pl. xxxi.

Porzana, *cf. supra*. *P. exilis vagans*, n. subsp., Segovia R., Honduras; R. RIDGWAY, P. U. S. Nat. Mus. 1887, p. 595. *P. spiloptera* [*cf. Zool. Rec. xiv, Aves*, p. 54], from Buenos Ayres, = *Rallus salinasi*, of Philippi, from Chili; EDD. [H. BURMEISTER], Ibis, 1888, p. 285. [The nest and eggs have now been obtained.]

Rallus longirostris scotti, n. subsp., West Coast of Florida, *R. l. caribbæus*, new to mainland of America; G. B. SENNETT, Auk, 1888, pp. 305, 306, & 319. *R. philippensis* figured; W. L. BULLER, Birds New Zealand, pl. xxxiii.

HELIORNITHIDÆ.

Heliornis senegalensis—does *H. petersi* differ? notes on the 2 species; J. BÜTTIKOFER, Notes Leyd. Mus. x [1888], pp. 103–105.

ALECTORIDÆ.

GRUIDÆ.

Fossil remains (new species), see PORTIS, A.

PSOPHIIDÆ.

The family, *sub voce* "Trumpeter;" A. NEWTON, Encycl. Brit. ed. 9, vol. xxiii.

Psophia leucoptera figured; *id. ibid.*

OTIDIDÆ.

Right scapula of a species of uncertain genus, from Post-tertiary deposits of Queensland; C. W. DE VIS, P. Linn. Soc. N.S.W. iii [1888], pp. 1288–1290, pl. xxxv, fig. 12.

Lophotis gindiana [♂ ♀], further notes; T. SALVADORI, Ann. Mus. Genov. xxvi, pp. 543 & 544.

Otis dybowskii, ♀ described for first time; L. TACZANOWSKI, P. Z. S. 1888, p. 456.

LIMICOLÆ.

ÆDICNEMIDÆ.

Ædicnemus longipes, n. sp. [= *Æ. gallarius*, pt.], N.-W. Australia; E. P. RAMSAY, Tab. List Austral. Birds, p. 35.

PARRIDÆ.

ELLIOT, D. G. *The Jacanidæ*. Auk, 1888, pp. 288-305.

As regards nomenclature, the author wishes to substitute Brisson's generic title *Jacana* for Linnæus' *Parra*, and would therefore prefer a new specific name for *P. jacana*. He recognizes 5 genera (see *Aphalus*, n. g., *infra*), and 9 species, to both of which he gives a key. The body of the work consists of descriptions, account of distribution, and other usual details.

Aphalus, n. g., type *Parra capensis*; *id. t. c.* pp. 292 & 301.

Parra gymnostoma, Wagl., = *P. spinosa* (Linn.); *id. t. c.* p. 297.

CHARADRIIDÆ.

Ægialitis asiatica, new to Italy; T. SALVADORI, Atti Acc. Tor. xxiii, pp. 44-48. *Æ. minor*, *Æ. cantianus*, figured; K. T. LIEBE, Monat. Schutze Vogelw. 1888, pls. ii & iii.

Anarhynchus frontalis figured; W. L. BULLER, Birds New Zealand, pl. xxvi.

Aphriza virgata, its affinities; R. W. SHUFELDT, J. Morph. ii, pp. 311-340, pl. xxv.

Charadrius hiaticula and *C. morinellus*, east of the Yenesay (Gt. Liakoff I.); H. SEEBOHM, Ibis, 1888, p. 347. *C. obscurus*, *C. bicinctus*, figured; W. L. BULLER, Birds New Zealand, pl. xxv.

Glareola emini [♀], n. sp., Lado, Equat. Africa; G. E. SHELLEY, P. Z. S. 1888, p. 49.

Hamatopus frazari, n. sp. [♂], near *H. pulliatus*, Pacific and Gulf Coasts of Lower California; W. BREWSTER, Auk, 1888, pp. 84-86.

Streptilas, *sub voce* "Turnstone;" A. NEWTON, Encycl. Brit. ed. 9, vol. xxiii.

Thinornis nova zealandia figured; W. L. BULLER, Birds New Zealand, pl. xxvi.

Vanellus cristatus in Barbadoes; H. W. FEILDEN, Zool. 1888, p. 301. *V. gregarius* [= *Cursorius gallicus* of Mitchell's 'Birds of Lancashire'] in England; H. SEEBOHM, P. Z. S. 1888, p. 416, and F. S. MITCHELL, Zool. 1888, p. 389.

SCOLOPACIDÆ.

Fossil remains (new species), see PORTIS, A.

SHUFELDT, R. W. The [2-notched] sternum [found] in the Solitary Sandpiper [and Green Sandpiper]. Proposed revival of genus *Rhyacophilus* for such forms. Auk, 1888, pp. 330-332.

Bartramia longicauda breeding in Oregon; J. C. MERRILL, *t. c.* p. 145.

Gallinago gallinula said to breed in various parts of Germany ; H. v. BASEDOW, M.T. orn. Ver. Wien, 1888, p. 36 : breeds irregularly in Poland ; L. TACZANOWSKI, Ornith., 1888, pp. 499 & 500. *G. pusilla* figured ; W. L. BULLER, Birds New Zealand, pl. xxviii.

Himantopus leucocephalus, *H. novæ zeelandiæ* figured ; *id. t. c.* pl. xxvii.

Limosa novæ-zeelandiæ figured ; *id. t. c.* pl. xxviii.

Numenius tahitiensis figured ; E. W. NELSON, Rep. Nat. Hist. Alaska, p. 121, pl. ix.

Recurvirostra novæ hollandiæ figured ; *id. t. c.* pl. xxvii.

Rhynchæa is posterior to *Rostratula* ; E. COUES, Auk, 1888, p. 204.

Scolopax, *sub voce* "Woodcock ;" A. NEWTON, Encycl. Brit. ed. 9, vol. xxiv. *S. gallinago*, sounds emitted ; H. STEVENSON, Tr. Norw. Soc. iv, pp. 486-496. *S. rusticola* figured ; LORD LILFORD, Col. Fig. Br. Birds, pt. vii.

Symphemia semipalmata inornata [cf. Zool. Rec. xxiv, *Aves*, p. 72], = *S. s. speculifera* ; J. A. ALLEN, Auk, 1888, pp. 423 & 424.

Tringa minuta, western form from Gt. Liakoff I., Siberia, *fide* Pleske ; H. SEEBOHM, Ibis, 1888, p. 348 : figured with *T. temmincki* ; F. LINDNER, Monat. Schutze Vogelw. 1888, pp. 461-466, pl. vi. *T. couesi*, *T. acuminata*, *T. maculata*, figured ; E. W. NELSON, Rep. Nat. Hist. Alaska, pp. 103, 106, & 108, pls. vi-viii.

GAVIÆ.

LARIDÆ.

The family as observed in Bohemia, see SCHIER, W.

Sternidæ, *sub voce* "Tern ;" A. NEWTON, Encycl. Brit. ed. 9, vol. xxiii.

MAGAUD D'AUBUSSON, L. Observations sur les espèces françaises de la sous-famille des Sterniens. Le Nat. 1888, pp. 224-226.

Anous cinereus, its eggs ; E. P. RAMSAY, P. Linn. Soc. N.S.W. ii, p. 678.

A. melanogenys, new to Hawaiian Is. ; L. STEJNEGER, P. U. S. Nat. Mus. 1888, pp. 94 & 95.

Gygis candida, see RIDLEY, H. N.

Larus argentatus vegæ, from Gt. Liakoff I., Siberia, *fide* Pleske ; H. SEEBOHM, Ibis, 1888, pp. 349 & 350. *L. bulleri*, *L. scopulinus*, figured ; W. L. BULLER, Birds New Zealand, pl. xxix. *L. eburneus*, description of the eggs and young, from Spitzbergen ; R. COLLETT, Ibis, 1888, pp. 440-443, pl. xiii [cf. C. E. BENDIRE, Auk, 1888, p. 202] : eggs exhibited ; P. Z. S. 1888, pp. 291 & 292. *L. minutus*, occurrence in America confirmed ; W. DUTCHER, Auk, 1888, pp. 171 & 172.

Onychoprion fuliginosa, its eggs ; E. P. RAMSAY, P. Linn. Soc. N.S.W. ii, p. 678.

Rhodostethia rosea figured ; E. W. NELSON, Rep. Nat. Hist. Alaska, p. 55, pl. iii.

Rissa tridactyla pollicaris [head] figured; *id.* t. c. p. 49, pl. ii, fig. 1.

Stercorarius crepidatus in Barbadoes in July; H. W. FEILDEN, Zool. 1888, p. 350.

Sterna caspia in the Færoes; H. W. FEILDEN, Zool. 1888, p. 108. *S. frontalis*, *S. antarcticus* figured; W. L. BULLER, Birds New Zealand, pl. xxx. *S. macrura* in Austro-Hungary; V. v. TSCHUSI ZU SCHMIDHOFFEN, MT. orn. Ver. Wien, 1888, p. 80. *S. mazima*, notes on coloration; E. A. SMYTH, JUNE., Pr. Elliot. Soc. ii [Jan. 1888], pp. 189-192. *S. paradisea* [?] breeds on the coasts of the East Sea and North Sea; H. ALBARDA, Tijdschr. Nederl. Dierk. Ver. (2) ii, pp. 10-17.

TUBINARES.

Osteology of the order, see SHUFELDT, R. W.

PROCELLARIIDÆ.

SALVIN, O. Critical Notes on the *Procellariidæ*. Ibis, 1888, pp. 351-360.

A paper in continuation of articles in "Ornithological Miscellany," based on specimens from Sir W. Buller, with the collections of Gould, Seeböhm, Salvin & Godman, and the British Museum generally. *Cf. infra*.

Bulweria columbina, the British specimen re-found; EDD., Naturalist, 1888, p. 156: figured as *Procellaria bulweri*; LORD LILFORD, Col. Fig. Br. Birds, pt. vii.

Diomedea exulans (2 figs.); W. L. BULLER, Birds New Zealand, pl. xl.

Fulmarus glacialis rogersi figured; E. W. NELSON, Rep. Nat. Hist. Alaska, p. 62, pl. ii, fig. 2.

Oceanodroma leucor[r]hoa macroductyla, n. subsp., Guadelupe I., Lower California; W. E. BRYANT, Bull. Cal. Ac. Sci. ii, pp. 450 & 451.

Æstrelata heraldica, n. sp., Chesterfield Is., W. Pacific; *Æ. hypoleuca*, n. sp., near *Æ. torquata*, Krusenstern Is., N. Pacific; O. SALVIN, Ibis, 1888, pp. 357-360. *Æ. sandwichensis* = *Æ. phæopygia*, Salv.; R. RIDGWAY, P. U. S. Nat. Mus. 1888, p. 104. *Æ. affinis* figured; W. L. BULLER, Birds New Zealand, pl. xli.

Procellaria, see *Bulweria*.

Puffinus bulleri, n. sp., New Zealand; O. SALVIN, Ibis, 1888, p. 354: figured; W. L. BULLER, Birds New Zealand, pl. xli. *P. cuneatus*, n. sp., Krusenstern Is., Pacific Ocean; O. SALVIN, Ibis, 1888, pp. 353 & 354. *P. knudseni*, n. sp. [= the last mentioned species], Kauai, Hawaiian Is.; L. STEJNEGER, P. U. S. Nat. Mus. 1888, pp. 93 & 94. *P. anglorum*, its habits [Skomer I.]; R. M. BARRINGTON, Zool. 1888, pp. 367-371: [Eigg]; H. A. MACPHERSON, t. c. pp. 372-375, and Tr. Norw. Soc. iv, pp. 445-447: [Scilly]; C. B. GAWEN, Zool. 1888, pp. 426 & 427, and J. H. GURNEY,

JUNB, Tr. Norw. Soc. iv, pp. 447-452, cut. *P. griseus*, *P. major* figured ;
 LORD LILFORD, Col. Fig. Br. Birds, pt. vii.

Thyelodroma, n. g. [type, *Puffinus sphenurus*] ; L. STEJNEGER, P. U. S.
 Nat. Mus. 1888, p. 93, note.

PYGOPODES.

ALCIDÆ.

Fossil remains (new species), see PORTIS, A.

HAMONVILLE [BARON D']. Note sur les quatre œufs d'*Alca impennis*
 appartenant à notre collection oologique. Mém. Soc. Z. Fr. 1888 [i],
 pp. 224-227, pls. v & vi.

No. 1 is an egg from Yarrell, said to have been taken in Britain.

Alca impennis, notes ; F. A. LUCAS, Auk, 1888, pp. 278-283 ; testimony
 of some Early Voyagers ; F. P. HARDY, Auk, 1888, pp. 380-384.
A. impennis, recent information ; S. GRIEVE, Tr. Edinb. Field Nat. Soc.
 Session xx [1888], 27 pp., 2 pls. *A. impennis* and *A. torda* [anat.] ; see
 SHUFELDT, R. W.

Fratercula artica, visceral anatomy ; see BEDDARD, F. E.

Lunda cirrhata, a rudimentary metatarsal bone ; R. W. SHUFELDT,
 Auk, 1888, p. 328 : head figured ; E. W. NELSON, Rep. Nat. Hist. Alaska,
 p. 38, pl. ii, fig. 5.

Brachyrhamphus kittlitzii, *Fratercula corniculata* [head] figured ; *id. t. c.*
 pp. 44, 38, pl. i, & pl. ii, fig. 4.

IMPENNES.

SPHENISCIDÆ.

Aptenodytes forsteri [Emperor Penguin], its occurrences, its specific
 name and synonymy as compared with that of the King Penguin ; the
 examples extant, the points of difference in coloration, external and
 internal structure, with 4 woodcuts of the skulls and sterna ; P. L.
 SCLATER, Ibis, 1888, pp. 325-334.

Eudyptes antipodum, *E. atratus* figured ; W. L. BULLER, Birds New
 Zealand, pl. xlvi.

Eudyptula minor, *Spheniscus demersus*, visceral anatomy ; see BEDDARD,
 F. E.

CRYPTURI.

The Order, *sub voce* "Tinamou" ; A. NEWTON, Encycl. Brit. ed. 9,
 vol. xxiii.

TINAMIDÆ.

Rhynchotus rufescens figured; *id. ibid*: introduced as a game-bird into Essex; J. E. HARTING, Ess. Nat. 1888, pp. 102-109, cut; *cf. t. c.* p. 206.

RATITÆ.

The Sub-Class, claws on the wing: see PARKER, W. K.

IMMANES.

DINORNITHIDÆ.

Dinornis elephantopus: leg, front view; W. L. BULLER, Birds New Zealand, pl. xlix: back view, pl. l. *Dinornis* (Prof. Hochstetter's restoration), *D. giganteus* skel., *D. elephantopus* skel., leg-bones of *D. maximus* figured; *id.* List of Silver's N. Z. Birds, pls. i-iv.

APTERYGES.

APTERYGIDÆ.

PARKER, T. J. Preliminary Note on the Development of the Skeleton of the *Apteryx*. P. R. Soc. xliii, pp. 391-397, 6 cuts.

— Second Note on the Development of the Skeleton of the *Apteryx*. *T. c.* pp. 482-487, 7 cuts.

Apteryx bulleri, n. sp. [North Island Bird]; R. B. SHARPE, Tr. N. Z. Inst. 1888 [xxi], p. 224: figured; W. L. BULLER, Birds New Zealand, pl. xlvii. *A. oweni* figured; *id. t. c.* pl. xlviii.

MEGISTANES.

CASUARIIDÆ.

Dromæus patricius, n. sp., from Post-tertiary deposits of Queensland; C. W. DE Vries, P. Linn. Soc. N.S.W. iii [1888], pp. 1290-1292, pl. xxxvi, figs. 13a, 13b, & 13c.

RHEÆ.

RHEIDÆ.

Rheu americana, remarks on its plumage; R. ZANDER, SB. Ges. Königsb. 1888, pp. 31-32.

STRUTHIONES.

STRUTHIONIDÆ.

Une ferme à Autruches en Californie. [Kenilworth, near Los Angeles.]
EDD., Bull. Soc. Acclim. 1888, pp. 994-998, 1 pl., 2 cuts. [Translated
from an American paper.]

FORMÆ SEDIS INCERTÆ.

Ornitholithes, *Ornithotichnes*, &c. (new fossil species), see PORTIS, A.



FAUNÆ.

EUROPE.

- °LACHMANN, H. Die Giftschlangen Europas. Magdeburg : 1888.
A popular work.
- HOPLEY, CATHERINE C. British Reptiles and Batrachians. Young Collector Series. London : 1888, 8vo.
An elementary work.
- GEISENHEYNER, L. Wirbelthierfauna von Kreuznach. 1. Theil: Fische, Amphibien, Reptilien. Wiss. Beilage z. Programm des k. Gymnasiums zu Kreuznach, 1888. [*Cf.* Zool. Gart. xxix, p. 95.]
- WOLTERSTORFF, W. Vorläufiges Verzeichniss der Reptilien und Amphibien der Provinz Sachsen und der angrenzenden Gebiete, nebst einer Anleitung zu ihrer Bestimmung. Z. Naturw. lxi, pp. 1-38.
- HAASE, E. Sachsens Amphibien. SB. Ges. Isis, 1887, pp. 57-65.
- WIEDEMANN, A. Die im Regierungsbezirke Schwaben und Neuburg vorkommenden Kriechthiere und Lurche. 29. Ber. Ver. Schwaben, 1887, pp. 163-216.
- MOJSISOVICS, A. VON. Ueber die geographische Verbreitung einiger westpaläarktischer Schlangen, unter besonderer Berücksichtigung der bisher in Oesterreich-Ungarn aufgefundenen Formen. MT. Ver. Steierm. 1887, pp. 223-287.

ENTZ, G. Beiträge zur Herpetologie Siebenbürgens. Orvos-termesz. Értesítő. 1888, pp. 124-136, pl. i.

CAMERANO, L. Monografia degli Ofidi italiani. Parte prima. Viperidi. Mem. Acc. Tor. (2) xxxix, 51 pp., 2 pls.

DE-CARLINI, A. Vertebrati della Valtellina. Atti Soc. Ital. xxxi, pp. 17-90.

Reptiles and Batrachians, pp. 80-85.

BÆTTGER, O. Verzeichniss der von Hrn. E. von Oertzen aus Griechenland und aus Kleinasien mitgebrachten Batrachier und Reptilien. SP. Ak. Berl. 1888, pp. 139-186.

ASIA.

See BÆTTGER, *suprà*.

BOULENGER, G. A. Second List of Reptiles and Batrachians from Cyprus. Ann. N. H. (6) ii, pp. 505 & 506.

BÆTTGER, O. Die Reptilien und Batrachier Transkasiens. Zool. Jahrb. iii, pp. 871-972, pl. xxxiv.

Preliminary diagnoses of the new species were published in Zool. Anz. xi, pp. 259-263.

NIKOLSKY, A. M. On the Vertebrate Fauna of the Balkash district. [Russian text.] Trudni St. Petersburg Nat. xix [1887], pp. 59-188. Reptiles and Batrachians, pp. 150-161.

H. GIGLIOLI & T. SALVADORI record some Reptiles and Batrachians from Corea. P. Z. S. 1887, pp. 594 & 595.

BETTGER, O. Materialien zur herpetologischen Fauna von China. II. 26.-28. Ber. Offenb. Ver. pp. 53-176, pls. i & ii.

1. Liste der zweiten von Moellendorffschen und der Herz'schen und Schmacker'schen Sendungen chinesischer Kriechtiere.

2. Erneute Aufzählung der Reptilien u. Batrachier des chinesischen Reiches.

GÜNTHER, A. On a Collection of Reptiles from China. Ann. N. H. (6) i, pp. 165-172, pl. xii.

From the mountains North of Kiu Kiang.

BETTGER, O. Aufzählung einiger neu erworbener Reptilien aus Ost-Asien. Ber. Senck. Ges. 1888, pp. 187-190.

BOULENGER, G. A. An Account of the Reptilia obtained in Burma, North of Tenasserim, by M. L. Fea, of the Genoa Civic Museum. Ann. Mus. Genov. (2) vi, pp. 593-604, pls. v-vii.

DORIA, G. Note Erpetologiche. I. Alcuni nuovi Sauri raccolti in Sumatra dal Dott. O. Beccari. T. c. pp. 646-652, figs., pl. viii.

GOGORZA Y GONZÁLEZ, J. Datos para la Fauna Filipina. An. Soc. Esp. xvii, pp. 247-303.

List of Reptiles and Batrachians, pp. 272-281.

AFRICA.

SIMROTH, H. Zur Kenntniss der Azorenfauna. Arch. f. Nat. liv.

Reptilien und Amphibien (*Lacerta dugesi*, *Rana esculenta*), pp. 201-203.

GÜNTHER, A. Contribution to the Knowledge of Snakes of Tropical Africa. Ann. N. H. (6) i, pp. 322-335, pls. xviii & xix.

Notes on new or little-known species, followed by remarks on the distribution of the Snakes of the Lake districts of Central Africa, and their relation to those of other districts of Tropical Africa.

MOCQUARD, F. Sur quelques Reptiles du Haut Sénégal. Le Nat. x, pp. 282 & 283.

BOULENGER, G. A. A List of the Reptiles and Batrachians collected by Mr. H. H. Johnston on the Rio del Rey, Cameroons District, West Africa. P. Z. S. 1887, pp. 564 & 565.

FISCHER, J. G. Ueber zwei neue Schlangen und einen neuen Laubfrosch von Kamerun. JB. Hamb. v, pp. 3-10.

BETTGER, O. Materialien zur Fauna des unteren Congo. II. Reptilien und Batrachier. Ber. Senck. Ges. 1888, pp. 3-108, pls. i & ii.

- GÜNTHER, A. Report on a Collection of Reptiles and Batrachians sent by Emin Pacha from Monbuttu, Upper Congo. P. Z. S. 1888, pp. 50 & 51.
- MOCQUARD, F. Sur une Collection de Reptiles et de Batraciens rapportés des Pays Comalis et de Zanzibar par M. G. Révoil. Mém. Cent. Soc. Philom. pp. 109-134, pls. xi & xii.
- FISCHER, J. G. Ueber eine Kollektion Reptilien von Angra Pequenna. JB. Hamb. v, pp. 11-17.
- BOULENGER, G. A. On new or little-known South African Reptiles. Ann. N. H. (6) ii, pp. 136-141.

AMERICA.

On the affinity of the North American Lizard-Fauna; HEILPRIN, Ann. N. H. (6) i, pp. 24-27, and BOULENGER, *l. c.* pp. 107-109.

JORDAN, D. S. A Manual of the Vertebrate Animals of the Northern United States, including the District North and East of the Ozark Mountains, South of the Laurentian Hills, North of the Southern Boundary of Virginia, and East of the Missouri River; inclusive of marine species. Fifth Edition, entirely rewritten and much enlarged. Chicago: 1888, 8vo, 375 pp.

Batrachia, pp. 174-186; *Reptilia*, pp. 187-211.

GARMAN, S. Reptiles and Batrachians from Texas. Bull. Ess. Inst. xix, pp. 119-138.

S. GARMAN, *op. cit.* xx, pp. 90-100, remarks on Kalm's descriptions of the North-American Batrachians in 1753.

BOCOIRT, F. Mission Scientifique au Mexique et dans l'Amérique Centrale. 3^e partie, Études sur les Reptiles et les Batraciens. Paris: 1888, folio, 11^e livr. pp. 657-696, pls. xlii-xlvii.

Continuation of the *Colubridæ*.

DUGÈS, A. Erpetologia del Valle de Mexico. Nat. Mex. (2) i, pp. 97-145, pls. xi-xiii.

GARMAN, S. Reptiles and Batrachians from the Caymans and from the Bahamas, collected by Prof. C. J. Maynard for the Museum of Comparative Zoology at Cambridge, Mass. Bull. Ess. Inst. xx, pp. 1-13.

FISCHER, J. G. Ueber eine Kollektion Reptilien und Amphibien von Hayti. JB. Hamb. v, pp. 23-45.

GÜNTHER, A. Notes on Reptiles and Frogs from Dominica, West Indies. Ann. N. H. (6) ii, pp. 362-366.

BOULENGER, G. A. On some Reptiles and Batrachians from Ignarasse, Pernambuco. T. c. pp. 40-43, pl. iii.

—, A List of Batrachians from the Province Santa Catharina, Brazil. T. c. pp. 415-417.

BÆTTGER, O. Beitrag zur Reptilfauna des oberen Beni in Bolivia.
Ber. Senck. Ges. 1888, pp. 191-199.

BURMEISTER, C. V. Algunas Noticias sobre la Fauna de la Patagonia.
Ann. Mus. B. Aires, iii, pp. 237-252.

A list of Reptiles and Batrachians, with description of a new Lizard,
pp. 250-252.

PAPUASIA, AUSTRALIA, AND POLYNESIA.

BOULENGER, G. A. On the Chelydoid Chelonians of New Guinea.
Ann. Mus. Genov. (2) vi, pp. 449-452.

— . Third Contribution to the Herpetology of the Solomon Islands.
P. Z. S. 1888, pp. 88-90.

On a collection from the Islands of Guadalcanar and New Georgia. A
list of all the Reptiles (28) and Batrachians (13) recorded from the Solo-
mons is now added.

DE VIS, C. W. A Contribution to the Herpetology of Queensland.
P. Linn. Soc. N.S.W. (2) ii, pp. 811-826.

Chiefly descriptions of new species of Lizards.

MACLEAY, W. Notes on some Ophidians from King's Sound, North-
West Australia. *Op. cit.* iii, pp. 416-418.

ZIETZ, A. List of the Ophidia of South Australia. Tr. R. Soc. S. Austr.
x, pp. 293-297.

PALÆONTOLOGICAL.

LYDEKKER, R. Catalogue of the Fossil Reptilia and Amphibia in the
British Museum (Natural History). Part I, containing the Orders
Ornithosauria, *Crocodylia*, *Dinosauria*, *Squamata*, *Rhynchocephalia*,
and *Proterosauria*. London: 1888, 8vo, 309 pp., woodcuts.

Exclusively confined to species and genera represented in the British
Museum. Corrections to this work: LYDEKKER, Geol. Mag. (3) v,
pp. 451-453.

WOODWARD, A. S. A Synopsis of the Vertebrate Fossils of the English
Chalk. P. Geol. Ass. x, pp. 273-338.

Reptiles, pp. 274-285.

MANSEL-PLEYDELL, J. C. Fossil Reptiles of Dorset. P. Dorset Field
Club, ix, pp. 1-40, figs.

A compilation.

SAUVAGE, H. E. Sur les Reptiles trouvés dans les Portlandien supérieur
de Boulogne-sur-Mer. Bull. Soc. géol. (3) xvi, pp. 623-632, pls. xi
& xii.

FILHOL, H. Étude sur les Vertébrés fossiles d'Issel (Aude). Mém. Soc.
Géol. (3) v.

Crocodyliens et Chéloniens, pp. 173 & 174.

BASSANI, F. Sui Fossili e sull'età degli Schisti bituminosi di Besano in Lombardia. Comunicazione preliminare. Atti Soc. Ital. xxix, pp. 15-72, 1886. [Omitted from Zool. Rec. xxiii.]

COPE, E. D. A Contribution to the History of the Vertebrata of the Trias of North America. P. Am. Phil. Soc. xxiv, pp. 209-228, pls. i & ii.
On some Reptiles and Batrachians from New Mexico.

REPTILIA.

The following is the classification of RAY LANKESTER, Art. "Zoology." Encycl. Brit. xxiv, p. 812 :—

Subclass 1. *Chelonia*.

" 2. *Lacertilia* (Orders *Rhynchocephala*, *Chamaeleonina*, *Lacertilia*).

" 3. *Ophidia* (Orders *Opoterodonta*, *Colubriformia*, *Proteroglypha*, *Solenoglypha*).

" 4. *Crocodylia* (Orders *Amphicaelia*, *Opisthocaelia*, *Procoelia*).

" 5. *Pterosauria*.

" 6. *Dinosauria* (Orders *Sauropoda*, *Stegosauria*, *Ornithopoda*, *Theriodonta*, *Caeluria*, *Compsognatha*, *Hallopoda*).

" 7. *Anomodontia*.

" 8. *Plesiosauria*.

" 9. *Ichthyosauria*.

BRONN, H. G. Klassen und Ordnungen des Thierreichs. VI. Abth. iii, *Reptilia*, by C. K. HOFFMANN. Lief. 57-64, pp. 1825-1984, pls. cxxxviii-clv.

Conclusion of the *Ophidia*.—Embryology.

GASCH, R. Beiträge zur vergleichenden Anatomie des Herzens der Vögel und Reptilien. Arch. f. Nat. xlv, pp. 119-152, pls. xi & xii.

LISSNER, E. Ein Beitrag zur Kenntniss der Kiemenspalten und ihrer Anlagen bei amnioten Wirbelthieren. Morph. JB. xiii, pp. 402-426, pl. xvi.

PERÉNYI, J. V. Entwicklung des Amnion, Wollf'schen Ganges und der Allantois bei den Reptilien. Zool. Anz. xi, pp. 138-141.

An abstract of a paper published in Hungarian, M. tud. akademiai "Ertésítő," 1888.

SQUAMATA.

LACERTILIA.

BEDDARD, F. E. On certain points in the Visceral Anatomy of the Lacertilia, particularly of *Monitor*. P. Z. S. 1888, pp. 98-107, figs.; also Anat. Anz. iii, pp. 204-206.

The author finds that the *Varanidae* differ from other Lacertilia in the occasional complication of the cystic and hepatic ducts, which form a

network, and in the presence of a fold of the peritoneum, which surrounds the abdominal viscera. These facts, in his opinion, necessitate the separation of the *Varanidae* from the true *Lacertilia* into a group equivalent to the *Rhynchocephalia*, and bearing special affinity to the *Crocodylia*.

SCHOOF, F. Beiträge zur Kenntniss des Urogenitalsystems der Saurier. Zool. Anz. xi, pp. 189 & 190, and Arch. f. Nat. liv, pp. 62-80, pl. iii.

OSTROUMOFF, A. Zur Entwicklungsgeschichte der Eidechsen. Vorläufige Mittheilung. Zool. Anz. xi, pp. 620-622.

On the embryology of *Phrynocephalus helioscopus*, Pall.

FRANCOTTE, P. Recherches sur le développement de l'épiphyse. Arch. Biol. viii, pp. 757-821, pls. xxxix & xl.

Based chiefly upon *Anguis fragilis* and *Lacerta muralis*.

STRAHL, H., & MARTIN, E. Die Entwicklung des Parietalauges bei *Anguis fragilis* und *Lacerta vivipara*. Arch. Anat. Phys. 1888, Anat. pp. 146-163, pl. x.

McKAY, W. J. On the Development and Structure of the Pineal Eye in *Hinulia* and *Grammatophora*. P. Linn. Soc. N.S.W. (2) iii, pp. 876-889, pls. xxii-xxiv.

G. A. BOULENGER, P. Z. S. 1888, pp. 351-353, figs., draws attention to the scaling of the reproduced tail in Lizards, showing that it may revert to an ancestral type, and thus afford a clue to the affinities of genera or species to one another.

GECKONIDÆ.

Teratoscincus scincus, Schleg.: notes by BËTTGER, Zool. Jahrb. iii, p. 878.

Crossobamon, n. n. for *Ptenodactylus*, Strauch, nec Gray; BËTTGER, Zool. Anz. xi, p. 260. *C. eversmanni*, Wiegman: notes by BËTTGER, Zool. Jahrb. iii, p. 880.

Gymnodactylus caspius, Eichw., and *fedtschenkoi*, Strauch: notes by BËTTGER, t. c. pp. 883 & 884, who is inclined to regard the latter as a variety of the former. *G. russowi*, Strauch: notes by BËTTGER, t. c. p. 885. *G. miliusii*, Bory, figured by MCCOY, Prodr. Zool. Viet. pl. cxxxii, fig. 1. *G. ærtzeni*, n. sp., BËTTGER, SB. Ak. Berlin, 1888, p. 152, Sporades.

Phyllodactylus europæus, Gené: on the calcarous neck-glands; LEFORI, Lo Spallanzani, xviii, p. 143: criticisms by CAMERANO, Boll. Mus. Zool. Anat. Comp. Torin. iii, No. 45. *P. marmoratus*, Gray, figured by MCCOY, Prodr. Zool. Viet. pl. cxxxii, fig. 2. *P. guentheri*, Blgr., recorded from Norfolk I. by DOUGLAS-ORILBY, P. Linn. Soc. N.S.W. (2) ii, p. 990.

Cœlura africana, n. sp., BOULENGER, Ann. N. H. (6) ii, p. 137, Damara land. *C. monilis* and *cincta*, n. spp., DE VIS, P. Linn. Soc. N.S.W. (2) ii, p. 812, Queensland.

Hemidactylus richardsonii, Gray: notes on specimens from the Gaboon; J. G. FISCHER, JB. Hamb. v, p. 49, pl. iv, fig. 10.

H. tropidolepis, n. sp., MOCQUARD, Mém. Cent. Soc. Philom. p. 113, Somaliland.

Pachydactylus lavigatus, n. sp., J. G. FISCHER, JB. Hamb. v, p. 15, pl. ii, fig. 3, Aus, Namaqualand. *P. fasciatus*, n. sp., BOULENGER, t. c. p. 138, Namaqualand.

Sphærodactylus argivus, p. 3, Cayman Brac, *corticulus*, p. 11, Rum Key, Bahamas, *decoratus*, p. 12, Rum Key, and *asper*, p. 13, Andros I., Bahamas, n. spp., GARMAN, Bull. Ess. Inst. xx. *S. meridionalis*, n. sp., BOULENGER, Ann. N. H. (6) ii, p. 40, Iguarasse, Pernambuco.

EUBLEPHARIDÆ.

Psilodactylus caudicinctus, A. Dum., is regarded by the natives of the Niger as highly poisonous; F. MOCQUARD, Le Nat. x, p. 282. The same belief is entertained as to the bite of the Indian Bis-Cobra, *Eublepharis*; J. W. VIDAL, J. Bomb. N. H. Soc. iii, p. 75.

UROPLATIDÆ.

Uroplates phantasticus, n. sp., BOULENGER, Ann. N. H. (6) i, p. 101, pl. v, fig. 1, Madagascar.

PYGOPODIDÆ.

Pygopus lepidopus, Lac., figured by MCCOY, Prodr. Zool. Vict. pls. clii & cliii, fig. 2.

Delma frazeri, Gray, figured; *id.* t. c. pl. cliii, fig. 1. *D. tincta*, p. 824, and *plebeia*, p. 825, n. spp., DE VIS, P. Linn. Soc. N.S.W. (2) ii, Queensland.

AGAMIDÆ.

Harpesaurus beccarii, n. sp., DORIA, Ann. Mus. Genov. (2) vi, p. 646, pl. viii, fig. 1, Labu Selassi, near Padang, Sumatra.

Dendragama, n. g., allied to *Acanthosaura*, Gray, and *Gonyocephalus*, Kaup; differing from the former in the presence of a gular sac, from the latter in the absence of a gular fold. *D. boulengeri*, n. sp., DORIA, t. c. p. 649, pl. viii, fig. 1, Mt. Singalang, W. Sumatra.

Agama sanguinolenta, Pall., p. 887, and *caucasica*, Eichw., p. 890: notes by BETTGER, Zool. Jahrb. iii.

Phrynocephalus helioscopus, Pall., p. 892, *interscapularis*, Licht., p. 898, and *mystaceus*, Pall., p. 899: notes by BETTGER, t. c. *P. raddei*, n. sp., *id.*, Zool. Anz. xi, p. 262, and t. c. p. 894, pl. xxxiv, fig. 2, Perewalnaja, Transcaspia.

Grammatophora inermis, n. sp., DE VIS, P. Linn. Soc. N.S.W. (2) ii, p. 812, Central Queensland.

Uromastix acanthinurus, Bell: notes by J. v. FISCHER, Zool. Gart. xxix, p. 97, fig. *U. hardwickii*, Gray: on its habits in confinement; *id.* t. c. p. 135: a preliminary note on its graminivorous diet; *id.* Zool. Ana xi, p. 115.

IGUANIDÆ.

Anolis chlorocyanus, D. & B.: notes by J. G. FISCHER, JB. Hamb. v, p. 30. *A. alliaceus*, Cope: remarks by GÜNTHER, Ann. N. H. (6) ii, p. 363. *A. luteosignifer*, p. 4 [= ? *sagrae*, D. & B.—REC.], p. 4, Cayman Brac, *maynardii*, p. 7, Little Cayman, and *leucophaeus*, p. 9, Inagua, n. spp., GARMAN, Bull. Ess. Inst. xx.

Liocephalus vittatus, Hall: notes by J. G. FISCHER, JB. Hamb. v, p. 27.

Liolaemus melanops, n. sp., C. V. BURMEISTER, An. Mus. B. Aires, iii, p. 252, Quelé-curá, Patagonia.

Proiguana (= *Iguana*) *europæana*, Filhol (foss.): notes by LYDEKKER, Geol. Mag. (3) v, p. 110.

Sceloporus scalaris, Wgm., p. 111, *microlepidotus*, Wgm., p. 112, pl. xi, fig. 5, *torquatus*, Wgm., p. 113, and *melanogaster*, p. 114, pl. xii, fig. 1, described by A. DUGÈS, Nat. Mex. (2) i. *S. couchii*, Baird, described by GARMAN, Bull. Ess. Inst. xix, p. 133.

ANGUIDÆ.

Gerrhonotus imbricatus, Wgm., described and figured by A. DUGÈS, Nat. Mex. (2) i, p. 119, pl. xii, fig. 9.

Diploglossus maculatus, n. sp. [= *striatus*, Gray.—REC.], GARMAN, Bull. Ess. Inst. xx, p. 5, Cayman Brac.

Anguis fragilis, var. *colchica*, Dem.: notes by BETTGER, Zool. Jahrb. iii, p. 902.

Placosaurus, Gerv., and *Palæosaurus*, Filhol (foss.): notes by LYDEKKER, Geol. Mag. (3) v, pp. 110 & 111.

HELODERMATIDÆ.

On a fatal case of poisoning by the bite of *Heloderma suspectum*, Cope; G. A. TREADWELL, P. Z. S. 1888, p. 266.

VARANIDÆ.

Varanus gouldii, Gray, figured by MCCOY, Prodr. Zool. Vict. pl. cli. On a specimen (*V. acanthurus*, Blgr. ?) from Queensland; DE VIS, P. Linn. Soc. N.S.W. (2) ii, p. 813.

Megalanina (= ? *Varanus*) *prisca*, Owen (foss.): note by A. S. WOODWARD, Ann. N. H. (6) i, p. 85.

TEIIDÆ.

Ameiva fuscata, Garm.: remarks by GÜNTHER, Ann. N. H. (6) ii, p. 363. *A. chrysolæma*, Cope: notes by J. G. FISCHER, JB. Hamb. v, p. 24. *A. regularis*, n. sp., *id. t. c.* p. 26, San Domingo. *A. maynardii*, n. sp., GARMAN, Bull. Ess. Inst. xx, p. 10, Inagua, Bahamas.

Stenolepis, n. g., nearly equally related to *Arthrosaura*, Blgr., and *Heterodactylus*, Spix; and agreeing with the former in the presence of

frontoparietal shields, the distinct ear, and the well-developed pentadactyle limbs, with the latter in the absence of præfrontal shields, the position of the nostril, the undivided palpebral disk, and the absence of a collar-fold. *S. ridleyi*, n. sp., BOULENGER, P. Z. S. 1887, p. 640, figs., Iguarasse, Pernambuco.

AMPHISEENIDÆ.

Monopeltis boulengeri, Bttg., described and figured by BËTTGER, Ber. Senck. Ges. 1888, p. 24, pl. i, fig. 1.

Agamodon compressum, n. sp., MOCQUARD, Mém. Cent. Soc. Philom. p. 121, pl. xi, fig. 2, Somaliland.

LACERTIDÆ.

Tachydromus, Daud.: notes on the species, of which 9 are admitted; GÜNTHER, ANN. N. H. (6) i, pp. 166-169. *T. sikkimensis*, n. sp., *id. t. c.* p. 168, Sikkim.

Lacerta pater, Lataste: notes on this form and its affinities to *L. ocellata* and *L. viridis*; J. v. FISCHER, Zool. Gart. xxix, p. 265. *L. viridis*, Laur.: bibliographical notes on the occurrence of the green Lizard in the Province of Brandenburg; E. VON MARTENS, SB. nat. Fr. 1888, p. 118. *L. viridis*, var. *major*, Blgr., p. 157, *muralis*, Laur., p. 159, and *danfordi*, Gthr., p. 163: extensive notes on specimens from Greece and Asia Minor; BËTTGER, SB. Ak. Berlin, 1888.

Ophiops schlueteri, Bttg., is now regarded as merely a variety of *O. elegans*, Mén.; BOULENGER, ANN. N. H. (6) ii, p. 505.

Eremias pardalis, D. & B. (= *guttulata*, Licht.): notes on the habits; J. v. FISCHER, Zool. Gart. xxix, p. 5. *E. intermedia*, Strauch: notes by BËTTGER, Zool. Jahrb. iii, p. 903. *E. brenchleyi*, Gthr.: notes by BËTTGER, 26-28. Ber. Offenb. Ver. p. 63, who regards it as probably specifically distinct from *E. argus*, Ptrs. The same opinion is held by J. G. FISCHER, who also figures a specimen; JB. Hamb. v, p. 46, pl. iv, fig. 9. *E. edwardsii*, n. sp., MOCQUARD, Mém. Cent. Soc. Philom. p. 115, pl. xi, fig. 1, Somaliland.

Scapteira grammica, Licht., p. 912, and *scripta*, Strauch, p. 914: notes by BËTTGER, Zool. Jahrb. iii.

SCINCIDÆ.

Egernia cunninghami, Gray, figured by MCCOY, Prodr. Zool. Vict. pl. cxli. *E. lauta*, p. 813, *bungana*, p. 814, and *rugosa*, p. 815, n. spp., DE VIS, P. Linn. Soc. N.S.W. (2) ii, Queensland.

Tiliqua nigrolutea, Q. & G., figured by MCCOY, *op. cit.* pl. cxxxi. *T. longicauda*, n. sp., DE VIS, t. c. p. 816, Queensland [= *Hemispheeriodon gerrardii*, Gray.—REC.].

Mabuia striata, Ptrs., figured by FISCHER, JB. Hamb. v, pl. ii, fig. 4, and regarded as possibly identical with *M. wahlbergii*, Ptrs., p. 13. *M. agilis*, Raddi: notes on specimens from Dominica; GÜNTHER, ANN. N. H. (6) ii, p. 364. *M. peringueyi*, n. sp., BOULENGER, t. c. p. 139, Namaqualand.

Lygosoma chinense, Gray, described by BÄTTGER, 26.-28. Ber. Offenb. Ver. p. 66. *L. forbesii*, n. sp., BOULENGER, Ann. N. H. (6) i, p. 343, New Guinea. *L. malayanum*, n. sp., DORIA, Ann. Mus. Genov. (2) vi, p. 651, Mt. Singalang, W. Sumatra.

Hinulia tigrina, p. 817, *ambigua*, p. 817, and *domina*, p. 818, n. spp., DE VIS, P. Linn. Soc. N.S.W. (2) ii, Queensland.

Mococa spectabilis, p. 819, and *delicata*, p. 820, n. spp., *id. t. c.*, Queensland.

Heteropus, D & B.: key to the Queensland species; DE VIS, *t. c.* p. 822. *H. vertebralis*, n. sp., *id. t. c.* p. 821, Queensland.

Anomalopus lentiginosus, n. sp., *id. t. c.* p. 823, Queensland [= *Lygosoma verreauxii*, A. Dum.—REC.].

Ophioscincus frontalis, n. sp., *id. t. c.* p. 823, Queensland.

Ablepharus æneus, Cope, = *A. cabinda*, Bocage; BÄTTGER, Ber. Senck. Ges. 1888, p. 29. *A. timidus*, n. sp., DE VIS, *t. c.* p. 824, Queensland.

Tropidophorus sinicus, Bttg., described and figured by BÄTTGER, 26.-28. Ber. Offenb. Ver. p. 67, pl. ii, fig. 2.

Scelotes macrolepis, n. sp., BOULENGER, Ann. N. H. (6) i, p. 102, Madagascar.

Sepsina hessei, Bttg., described and figured by BÄTTGER, Ber. Senck. Ges. 1888, p. 31, pls. i, fig. 3 & ii, fig. 2.

ANELYTROPIDÆ.

Feylinia macrolepis, Bttg., described and figured by BÄTTGER, Ber. Senck. Ges. 1888, p. 35, pl. ii, fig. 4.

RHYPTOGLOSSA.

Chamæleon guentheri, p. 22, pl. ii, fig. 1, Nossi Bé, *bättgeri*, p. 23, pl. ii, fig. 2, Nossi Bé, and *gastrotenia*, p. 103, pl. v, fig. 2, Madagascar, n. spp., BOULENGER, Ann. N. H. (6) i.

PYTHONOMORPHA.

DOLLO, L. Sur le crâne des Mosasauriens. Bull. Sci. France, i, pp. 1-11, figs., pl. i.

On the suprapedial pit (Dollo) in the quadrate, and figures of the skulls of *Mosasaurus camperi*, Cuv., and *Hainosaurus bernardi*, Dollo.

OPHIDIA.

VAILLANT, L. Les premiers Actes du Travail digestif, préhension des aliments et déglutition, chez les Ophidiens. Mém. Cent. Soc. Philom. pp. 35-46.

GARNIER, J. H. Snake Poisons. P. Canad. Inst. xxiii, pp. 255-261.

C. BRONGNIART has notes on Snakes in confinement; Le Nat. x, pp. 101-103.

TYPHIOPIDÆ.

Typhlops inornatus, n. sp., BOULENGER, Ann. N. H. (6) i, p. 344, New Guinea. T. (*Onychocephalus*) *congius*, Bttg., described and figured by BETTGER, Ber. Senck. Ges. 1888, p. 44, pl. i, fig. 5.

UROPELTIDÆ.

Silybura nilgherriensis, var. *picta*, Bedd.: notes by G. E. MASON, Ann. N. H. (6) i, p. 185. *S. phipsonii*, n. sp., *id. t. c.* p. 184, Bombay Ghats.

BOIDÆ.

Charina brachyops, n. sp., COPE, P. U. S. Nat. Mus. xi, p. 88, pl. xxxvi, fig. 1, Point Reyes, California.

Eryx jaculus, L.: the specimens from Transcaspia, Afghanistan, and Northern Persia, belong to a distinct variety, *miliaris*, Pall.; BETTGER, Zool. Jahrb. iii, p. 938. *E. jayakari*, n. sp., BOULENGER, Ann. N. H. (6) ii, p. 508, Muscat, Arabia.

Ungalia moreletii, Bocourt, figured by BOCOURT, Miss. Sc. Mex., Rept. pl. xlii, fig. 5.

Tropidophis conjunctus, n. sp., J. G. FISCHER, JB. Hamb. v, p. 31, pl. iii, fig. 5, San Domingo.

Chilabothrus maculatus, p. 33, pl. iii, fig. 7, and *gracilis*, p. 35, pl. iii, fig. 8, n. spp., *id. t. c.*, San Domingo.

Pelophilus madagascariensis, D. & B.: notes on embryos, by MOCQUARD, Bull. Soc. Philom. (7) xii, p. 34.

Python anchieta, n. sp., BARBOZA DU BOCAGE, J. Sci. Lisb. xii, p. 87 [1887], Benguella.

Palæopython, Rochebr., = *Paleryx*, Ow. (foss.); LYDEKKER, Geol. Mag. (3) v, p. 112.

PALÆOPHIIDÆ.

Notes by LYDEKKER, Geol. Mag. (3) v, pp. 112 & 113.

COLUBRIDÆ.

Rhinocolumus, n. g. (*Calamar.*). Body elongate, cylindrical, of uniform thickness throughout; head small, not distinct from neck, narrow and tapering; tail rather short, obtuse; eye very small; cleft of mouth narrow, with feeble jaws; scales smooth, in 17 rows; subcaudals paired; rostral shield wedge-shaped; two pairs of frontals, the posterior replacing a loreal and antecular; nasal single, but with a groove below the narrow nostril; maxillary armed with a few comparatively strong teeth, the two hindmost of which are enlarged and grooved. *R. dimidiatus*, n. sp. GÜNTHER, Ann. N. H. (6) i, p. 322, pl. xix, fig. c, Mpwapwa, E. Africa.

Calamelaps miolepis, n. sp., *id. t. c.* p. 323, Lake Nyassa.

Elaposchema, n. g. [= *Culamelaps*, Gthr.—REC.], MOCQUARD, Mém. Cent. Soc. Philom. p. 122. *E. vaillanti*, n. sp., *id. t. c.* p. 123, pl. xii, fig. 1.

Brachyophis, n. g. Body remarkably short; scales smooth, scarcely imbricate; head not distinct from neck; snout trenchant; eyes very small, pupil round; a large azygos occipital behind the parietals; nasal undivided, separated from the rostral by the first labial; no loreal; one præ- and two postoculars; no temporals; ventrals keeled on the sides; anal divided; subcaudals simple; maxillary teeth few, posterior grooved. *B. revoili*, n. sp., *id. t. c.* p. 125, pl. xi, fig. 3, Somaliland.

Elapomorphus acanthias, Kröy.: note by GÜNTHER, *t. c.* p. 323. *E. caecutiens*, n. sp., *id. t. c.* pl. xix, fig. B, Cameroon Mountains.

Urieichs capensis, Smith, p. 324, *lunulatus*, Ptrs., p. 324, and *concolor*, Fisch., p. 325: notes by GÜNTHER, *t. c.* *U. jacksonii*, n. sp., *id. t. c.* p. 325, pl. xix, fig. E, foot of Kilimanjaro.

Geophis emmeli, n. sp., BÆTTGER, Ber. Senck. Ges. 1888, p. 192, fig., Upper Beni R., Bolivia.

Achalinus rufescens, n. sp., BOULENGER, Ann. N. H. (6) ii, p. 43, Hong Kong.

Homalosoma variegatum, Ptrs.: on a colour variety; *id. t. c.* p. 140.

Simotes torquatus, Bharno, Burma, and *planiceps*, Minhla, n. spp., *id.* Ann. Mus. Genov. (2) vi, p. 597. *S. chinensis* n. sp., GÜNTHER, Ann. N. H. (6) i, p. 169, Kiu Kiang.

Simotes herzi, Bttg., = *Coluber rufodorsatus*, Cant.; BÆTTGER, 26.-28. Ber. Offenb. Ver. p. 70.

Rhinocheilus antonii, n. sp., A. DUGÈS, Nat. Mex. (2) i, p. 66, pl. vii, Mazatlan.

Coronella torquata, p. 103, pl. v, fig. 3, and *microps*, p. 104, pl. v, fig. 4, n. spp., BOULENGER, Ann. N. H. (6) i, Madagascar.

Neusterophis atratus, Ptrs., = *Coronella olivaceu*, Ptrs.; BÆTTGER, Ber. Senck. Ges. 1888, p. 48.

Liophis julia, Cope, redescribed by GÜNTHER, Ann. N. H. (6) ii, p. 365.

Alsophis fuscicauda, n. var. of *A. angulifer*; GARMAN, Bull. Ess. Inst. xx, p. 6, Cayman Brac.

Dromicus anomalus, Ptrs., p. 37, and *parrifrons*, Cope, p. 40, described by J. G. FISCHER, JB. Hamb. v. *D. baroni*, n. sp., BOULENGER, Ann. N. H. (6) i, p. 104, pl. v, fig. 5, Madagascar.

Erythrolamprus grammophrys, n. sp., A. DUGÈS, P. Am. Phil. Soc. xxv, p. 181, fig., Tengohecho, State of Michoacan, Mexico.

Pityophis deppii, Jan, described and figured by A. DUGÈS, Nat. Mex. (2) i, p. 123, pl. xiii, fig. 15.

Ablabes homeyeri, Ptrs., = *Dromophis angolensis*, Bocage; BÆTTGER, Ber. Senck. Ges. 1888, p. 55.

Cyclophis fasciatus, Jan: notes by BÆTTGER, Zool. Jahrb. iii, p. 920.

Cyclophiops, n. g., closely allied to *Cyclophis*, Gthr., but differing in the divided nasal. *C. doriae*, n. sp., BOULENGER, Ann. Mus. Genov. (2) vi, p. 599, Kakkim Hills, Burma.

Pseudocyclophis, n. g., differing from *Cyclophis*, Gthr., in the vertical pupil. *P. walteri*, n. sp., BÆTTGER, Zool. Anz. xi, p. 262, and Zool. Jahrb. iii, p. 922, pl. xxxiv, fig. 1, Frontier of Transcaspia and Persia.

Lytorhynchus ridgewayi, Blgr. : notes on a specimen from Durun, Transcaspia ; *id.* Zool. Jahrb. iii, p. 924.

Cynophis mœllendorffi, Bttg., described and figured by BËTTGER, 26.-28. Ber. Offenb. Ver. p. 72, pl. i, fig. 1.

Zamenis viridiflavus, Lacép. : notes on the pairing ; A. LENDL, Term. füzetek, xi, p. 59, fig.

Periops dorri, n. sp., LATASTE, Le Nat. x, p. 227, Upper Senegal.

Spilotes pullatus, L., n. var. *anomalepis*, BOCOURET, Miss. Sc. Mex., Rept. pl. xlv, fig. 2, Brazil. *S. argus*, n. sp., *id.* t. c. p. 692, pl. xlviii, fig. 10, Mexico.

Phyllophis carinata, Gthr. : on a specimen from Kiu Kiang ; GÜNTHER, Ann. N. H. (6) i, p. 170.

Tropidonotus tessellatus, Laur. : on its occurrence on the Moselle ; NOLL, Zool. Gart. xxix, p. 242. *T. (Eutainia) collaris*, Jan, p. 125, pl. xiii, fig. 16, *pulchritatus*, Cope, p. 126, *insigniarum*, Cope, p. 127, *scalaris*, Cope, p. 128, pl. xiii, fig. 17, and *T. (Regina) mesomelana*, Jan, p. 129, described by A. DUGÈS, Nat. Mex. (2) i.

Storeria dekayi, n. var. *anomala*, *id.* P. U. S. Nat. Mus. xi, p. 9, fig., Orizaba, Mexico.

Hemigenius variabilis, Dugès, described by A. DUGÈS, P. Am. Phil. Soc. xxv, p. 182, fig.

Homalophis doriae, Ptrs. : a variety described by STEINDACHNER, SB. Ak. Wien, xcvi, p. 71.

Calamohydrus, n. g., *Homalopsinarum*. Teeth in jaws and palate small, equal ; head rather elongate, slightly distinct from neck ; eyes very small, with round pupil, separated from the labials by suboculars ; nostrils superior, pierced in the upper part of the nasal ; a pair of internasals ; a single præ-frontal ; rostral small, not prominent ; loreal, præ- and post-ocular present ; scales finely striated and feebly keeled (in 17 rows) ; tail moderate, tapering to a fine point ; anal and subcaudals divided. BOULENGER, Ann. N. H. (6) ii, p. 43. *C. andersonii*, n. sp., *id.* t. c. p. 44, Hong Koug.

Ahaetulla emini, p. 325 (and P. Z. S. 1888, p. 51), Monbattu, *shiruna*, p. 326, Shire River, *bocagii*, p. 326, Angola, and *gracillima*, p. 326, Lower Congo, n. spp., GÜNTHER, Ann. N. H. (6) i.

Dendrophis subocularis, n. sp., BOULENGER, Ann. Mus. Genov. (2) vi, p. 600, Bhamo, Burma. *D. gregorii*, n. sp., HALY, Taprobauian, iii, p. 51, Ceylon.

Uromacer oxyrhynchus, D. & B., described by J. G. FISCHER, t. c. p. 41.

Langaha intermedia, n. sp., BOULENGER, Ann. N. H. (6) i, p. 105, pl. v, fig. 6, Nossi Bé.

Ramphiophis rostratus, Ptrs., = *Rhagheris oxyrhynchus*, Reinh. ; GÜNTHER, t. c. p. 327.

Psammophis acutus, n. sp., *id.* t. c. p. 327, pl. xix, fig. 1, Pungo Andongo.

Psammodynastes conjunctus, Ptrs., = *pictus*, Gthr. ; MOCQUARD, Bull. Soc. Philom. (7) xii, p. 104.

Dasyplettis elongata, n. sp., *id.* Mém. Cent. Soc. Philom. p. 131, pl. xii, fig. 2, Zanzibar.

Dipsas ornata, n. sp., MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 416, King's Sound, N.W. Australia.

Pythonodipsas carinata, Gthr., redescribed by BOULENGER, Ann. N. H. (6) ii, p. 140.

Pareas mœllendorffi, Bttg., figured by BÆTTGER, 26.-28. Ber. Offenb. Ver. pl. ii, fig. 1. *P. andersonii*, n. sp., BOULENGER, Ann. Mus. Genov. (2) vi, p. 601, Upper Burma.

Odontomus fergusonii, n. sp., HALY, Taprobanian, iii, p. 51, Ceylon.

Ulupe darisoni, Blanf.: note on a specimen from Siam; BÆTTGER, 26.-28 Ber. Offenb. Ver. p. 55.

Simocephalus nyassæ, n. sp., GÜNTHER, Ann. N. H. (6) i, p. 328, Lake Nyassa.

Boodon geometricus, Boie.: remarks by GÜNTHER, t. c. p. 328. *B. ventralis*, p. 329, pl. xviii, fig. A, Old Calabar and Ashantee, *seychellensis*, p. 330, pl. xviii, fig. C, Seychelles, *bipræocularis*, p. 330, pl. xviii, fig. B, Lake Tanganyika and Mombas, *poensis*, p. 330, Fernando Po, and *mentalis*, p. 331, pl. xix, fig. A, Damaraland, n. spp., *id. t. c.*

Boodon (Alopecion) vossii, n. sp., J. G. FISCHER, JB. Hamb. v, p. 3, pl. i, fig. 1, Cameroon.

ELAPIDÆ.

Vermicella bertholdi, Jan.: note by A. ZIETZ, Tr. R. Soc. S. Austr. x, p. 300.

Pseudechis australis, Gray, figured by MCCOY, Prodr. Zool. Vict. pl. cxlii.

Hoplocephalus melanurus, p. 88, and *woodfordi*, p. 89, n. spp., BOULENGER, P. Z. S. 1888, Solomon Is.

Diemenia superciliosa, Fisch.: note by A. ZIETZ, t. c. p. 300. *D. angusticeps*, n. sp., MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 417, King's Sound, N.W. Australia.

Elapsoidea hessei, Bttg., described and figured by BÆTTGER, Ber. Senck. Ges. 1888, p. 83, pl. ii, fig. 6. *E. nigra*, n. sp., GÜNTHER, Ann. N. H. (6) i, p. 332, Ushambola. *E. decosteri*, n. sp., BOULENGER, *op. cit.* ii, p. 141, Delagoa Bay.

Naja tripudians, Merr., var. *oxiana*, Eichw.: notes by BÆTTGER, Zool. Jahrb. iii, p. 943.

Bungurus multicinctus, Blyth (= *semifasciatus*, Gthr., nec Kuhl), described by BÆTTGER, 26.-28. Ber. Offenb. Ver. p. 86.

Dendraspis, Schleg.: a revision of the species, by BARBOZA DU BOCAGE, J. Sci. Lisb. xii, pp. 138-147, figs.

Causus jacksonii, n. sp., GÜNTHER, Ann. N. H. (6) i, p. 331, Lake Tanganyika and Lamu.

Azemiope, n. g. Maxillary short, erect, bearing a single large perforated fang; palatine and pterygoid teeth numerous, small; head distinct from neck; nostril pierced in a single nasal; eye small, with vertical pupil; two præ- and two post-oculars; loreal present; body and tail moderate, cylindrical; scales smooth; anal single; sub-caudals double. BOULENGER, Ann. Mus. Genov. (2) vi, p. 602. *A. fear*, n. sp., *id. t. c.* p. 603, Kakhien Hills, Upper Burma.

HYDROPHIIDÆ.

O. BETTGER, Zool. Anz. xi, pp. 395-398, remarks on the external sexual characters of the *Hydrophiidæ*.

Platurus colubrinus, Schn. : remarks on this Snake, which is believed to be innocuous; J. G. FISCHER, JB. Hamb. v, p. 18.

Hydrophis viperina, Schmidt : the maxillary is armed with a series of four equidistant, subequal, grooved fangs, without any solid teeth; BOULENGER, Ann. N. H. (6) ii, p. 44.

VIPERIDÆ.

MIVART, St. G. Art. "Viper," Encycl. Brit. xxiv, pp. 247 & 248, figs.

Vipera, Laur. : CAMERANO (*suprà*, p. 2) admits only two European species, viz., *V. berus*, L., and *V. ammodytes*, L.; *V. aspis*, L., and *latastii*, Boscá, being regarded as subspecies of the former. *V. berus*, L. : J. BLUM publishes a lengthy memoir on its distribution in Germany, a work undertaken by the late J. NOTTHAFT in 1885; Abb. Senck. Ges. xv, pp. 123-278, with 9 woodcuts and a map; abstract in Zool. Gart. xxix, pp. 300-304. On its occurrence in Württemberg; O. KRIMMEL, JH. Ver. Württ. xlv, p. 232. *V. ammodytes*, L. : notes by PIRONA, Atti Ist. Venet. (6) vi, p. 1165. *V. obtusa*, Dwig. : notes by BETTGER, Zool. Jahrb. iii, p. 946. *V. peringueyi*, n. sp., BOULENGER, Ann. N. H. (6) ii, p. 141, Damaraland.

Echis arenicola, Boie : notes by BETTGER, t. c. p. 949.

Atheris, Cope : note on the specific characters of the various forms; J. G. FISCHER, JB. Hamb. v, p. 7. *A. subocularis*, n. sp., *id. t. c.* p. 5, pla. i, fig. 2, & ii, fig. 11, Cameroon. *A. leviceps*, Bttg., described and figured by BETTGER, Ber. Senck. Ges. 1888, p. 92, pl. ii, fig. 7.

GARMAN, S. The Rattle of the Rattlesnake. Bull. Mus. C. Z. xiii, pp. 259-268, pls. i & ii, and Bull. Ess. Inst. xix, pp. 119-121.

On the mode of growth and probable origin of the rattle.

Crotalus basiliscus, Cope, and *polystictus*, Cope, described by A. DUGÈS, Nat. Mex. (2) i, pp. 132 & 133. *C. palmeri*, n. var. of *C. tigris*, Kenn.; GARMAN, Bull. Ess. Inst. xix, p. 124, Monclava, Mexico.

Halys acutus, n. sp., GÜNTHER, Ann. N. H. (6) i, p. 171, pl. xii, Kiu Kiaug, China.

Trimeresurus riukiuanus, Hilgend. : notes by J. G. FISCHER, JB. Hamb. v, p. 20.

ORNITHOSAURIA.

NEWTON, E. T. Notes on Pterodactyls. P. Geol. Ass. x, pp. 406-424 figs.

A review of our knowledge of this order.

[NEWTON, E. T.] On the Skull, Brain, and Auditory Organ of a New Species of Pterosaurian (*Scaphognathus purdoni*), from the Upper Lias, near Whitby, Yorkshire. Phil. Tr. clxxix B, pp. 503-537, pls. lxxvii & lxxviii; abstract, P. R. Soc. xliii, pp. 436-440.

This paper is followed by a synonymic list of the genera and species of *Ornithosauria*.

Pterodracon, n. g., for *Ornithocephalus brevirostris*, Sömmmer.; LYDEKKER, Cat. Foss. Rept. i, p. 3.

Tribelosodon longobardicus, n. g. & sp., BASSANI, Atti Soc. Ital. xxix, p. 20 [1886], Trias of Lombardy.

DINOSAURIA.

H. G. SEELEY, Geol. Mag. (3) v, p. 45, requests that the names *Omosauria* and *Cetiosauria* [cf. Zool. Rec. xxiv, Rept. p. 20] may be considered as not to have been published, and proposes to replace them by the terms *Ornithischia* and *Saurischia*.

H. G. SEELEY, Q. J. Geol. Soc. xliv, pp. 85 & 86, makes some further remarks on the classification of the *Dinosauria*.

R. LYDEKKER, t. c. pp. 46-61, has notes on various Dinosaurian remains in the British Museum.

DOLLO, L. Sur la signification du "Trochanter pendant" du Dinosauriens. Bull. Sci. France, i, pp. 215-224, figs.

MOUSSAYE, G. DE LA. Les Dinosauriens et le transformisme. Paris: 1888, 8vo.

L. DOLLO, C.R. cvi, pp. 775-777, re-characterizes the two families *Camptonotidae* [should be *Camptosauridae*, the name *Camptonotus*, pre-occupied, having been altered to *Camptosaurus* by Marsh.—REC.] and *Iguanodontidae* of Marsh, the former to include *Camptosaurus*, Marsh, and *Hypsilophodon*, Huxley, the latter *Iguanodon*, Mant., alone.

Iguanodon davenporti, n. sp., LYDEKKER, Q. J. Geol. Soc. xliv, p. 47, figs., and Cat. Foss. Rept. p. 196, fig., Wadhurst Clay, Lower Wealden, Hastings.

Cumnoria, n. g., for *Iguanodon prestwichii*, Hulke; SEELEY, Rep. Brit. Ass. 1887, p. 698.

Neosodon, de la Moussaye, = *Caulodon praecursor*, Sauv. ; SAUVAGE, Bull. Soc. géol. (3) xvi, p. 626.

Sphenospondylus gracilis, n. sp., LYDEKKER, Q. J. Geol. Soc. xliv, p. 47, and Cat. Foss. Rept. p. 238, fig., Wealden, I. of Wight.

SMETS, G. *Aachenosaurus multidentis*, Reptile fossile des Sables d'Aix-la-Chapelle. Hasselt: 1888, 8vo, 23 pp., 1 pl.

A new genus of *Hadrosauridae*, *Aachenosaurus multidentis*, is established for supposed fragments of bones from the Sands of Aix-la-Chapelle. [Cf. Zool. Rec. xxiv, Rept. p. 21.]

L. DOLLO, Bull. Soc. Belg. Géol. ii, p. 200, having examined these fossils, pronounces them to be silicified masses of wood.

Trachodon cantabrigiensis, n. sp., LYDEKKER, Q. J. Geol. Soc. xliv, p. 47, and Cat. Foss. Rept. i, p. 244, fig., Cambridge Greensand.

Stegosaurus, Marsh. O. C. MARSH's article on the Skull and Dermal Armour [cf. Zool. Rec. xxiv, *Rept.* p. 20] is reprinted in Geol. Mag. (3) v, pp. 11-15, figs., pls. i-iii.

Ceratops, n. g., type of a new family, *Ceratopsidae*, allied to *Stegosaurus*, but differing especially in the presence of a pair of large horns on the upper part of the head. *C. montanus*, n. sp., MARSH, Am. J. Sci. (3) xxxvi, p. 477, pl. xi, Cretaceous (Laramie Formation) of Montana. Is probably identical with *Polygonax*, Cope; COPE, Am. Nat. xxii, p. 1108.

Priconodon crassus, n. g. & sp.: for a tooth of an herbivorous Dinosaur from the Potomac Formation; MARSH, Am. J. Sci. (3) xxxv, p. 93, figs.

Celurus gracilis, n. sp., *id. t. c.* p. 94, Potomac Formation, North America.

Celurus longicollis, Cope, and *bauri*, Cope, are described and referred to *Tanystropheus*, v. Mey.; COPE, P. Am. Phil. Soc. xxiv, pp. 221 & 226.

Tanystropheus willistoni, n. sp., *id. t. c.* p. 227, Trias, New Mexico.

Ornithopsis hulkii, Seeley: maxilla and tooth figured by LYDEKKER, Q. J. Geol. Soc. xliv, pl. iii.

Thecospondylus daviesi, n. sp., SEELEY, *t. c.* p. 79, figs., Wealden of Brook, Isle of Wight.

Allosaurus medius, n. sp., MARSH, Am. J. Sci. (3) xxxv, p. 93, Potomac Formation, North America.

Massospondylus carinatus (Owen, *nom. nud.*), n. g. & sp.: for bones of *Theropoda* from the Karoo system of Basutoland, S. Africa, which agree, at least generically, with others from the Maleri beds of India; LYDEKKER, Rec. Geol. Surv. Ind. xxi, p. 147, fig.

Pleurocalus, n. g., most nearly allied to *Morosaurus*, Marsh, for *P. nanus*, p. 90, figs., and *altus*, p. 92, n. spp.; MARSH, Am. J. Sci. (3) xxxv, figs., Potomac Formation, North America.

EMYDOSAURIA.

Alligator mississippiensis, Daud.: notes on the nest and eggs; F. CLARKE, Zool. Anz. xi, pp. 568-570, and Ann. N. H. (6) ii, pp. 509-511.

Isselodus, n. g., for *Crocodylus doduni*, Cuv. (foss.); FILIOL, Mém. Soc. Géol. (3) v, p. 174.

Goniopholis lucasii, n. sp. (foss.), COPE, Am. Nat. xxii, p. 1107, Jurassic of Colorado.

Oweniasuchus, n. n. for *Brachydectes*, Ow., *nec* Cope, (foss.); A. S. WOODWARD, Geol. Mag. (3) ii, p. 506 (1885).

Belodon bueros, Cope, p. 217, and *scolopax*, Cope, p. 221: notes by COPE, P. Am. Phil. Soc. xxiv. The brain of *Belodon bueros* is described and figured, and compared with that of *Alligator* and *Diadectes*; *id. t. c.* p. 219, pl. ii.

Episcoposaurus, n. g., allied to *Belodon*, for *E. horridus*, n. sp.; *id. t. c.* p. 213, Trias. New Mexico.

CHELONIA.

GÜNTHER, A. "Tortoise." *Encycl. Brit.* xxiii, pp. 455-460, figs.

The following arrangement is adopted :—

Subord. I. ATHECÆ.

Fam. *Sphargidæ*.

Subord. II. TESTUDINATA.

Series A. *Cryptodira*.

Group. A. *Digitata*.

Fams. *Testudinidæ*, *Platysternidæ*, *Baënidæ*, *Chelydridæ*, *Staurotypidæ*, *Cinosternidæ*, *Pseudotrionychidæ*.

Group. B. *Pinnata*.

Fam. *Chelonidæ*.

Series B. *Pleurodira*.

Fams. *Chelydridæ*, *Pelomedusidæ*, *Carettochelydridæ*, *Miolaniidæ*.

Subord. III. TRIONYCHOIDEA.

Fam. *Trionychidæ*.

G. BAUR, *Zool. Anz.* xi, pp. 417-424, 592-597, & 736-740, has notes on the osteology of Chelonians, and proposes a revised nomenclature for the epidermal shields and bony plates of the shell.

G. A. BOULENGER, *Ann. N. H.* (6) i, p. 452, fig., remarks on the supposed presence of ossa transversa in a Chelonian (*Hydraspis hilairii*). The error is corrected ; *op. cit.* ii, p. 122.

DOGIEL, A. Ueber das Verhalten der nervösen Elemente in der Retina der Ganoiden, Reptilien, Vögel und Säugetiere. Vorläufige Mittheilung. *Anat. Anz.* iii, pp. 133-143, figs.

Chelonia, pp. 137 & 138.

MITSUKURI, K. The Ectoblastic Origin of the Wolffian Duct in Chelonia. (Preliminary Notice.) *Zool. Anz.* xi, p. 111.

E. H. BARBOUR, *Am. J. Sci.* (3) xxxvi, pp. 227-230, pl. v, has biological notes on a young Tortoise (*Chrysemys picta*) with two heads.

TRIONYCHOIDEA.

Trionyx, Geoffr. : notes on the American species, by BAUR, *Am. Nat.* xxii, pp. 1121 & 1122.

Platypelis agassizii, n. n. for *P. ferox*, Ag., *nec* Schn.; *id. t. c.* p. 1122.

PLEURODIRA.

G. BAUR, *Zool. Anz.* xi, pp. 419-421, proposes the following classification of the typical *Pleurodira* :—

1. MESOPLASTRALIA.

Fams. *Pleurosternidæ*, *Sternotheridæ*, *Pelomedusidæ*.

2. AMESOPLASTRALIA.

Fams. *Pleiochelydridæ*, *Chelydridæ*.

Criticisms by BOULENGER, Ann. N. H. (6) ii, pp. 352-354. In a later note, Zool. Anz. xi, pp. 737-739, BAUR modifies his arrangement, uniting the *Sternotheridae* and *Pelomedusidae* and separating the *Podocnemididae*.

BOULENGER, G. A. On the Characters of the Chelonian Families *Pelomedusidae* and *Chelydridae*. Ann. N. H. (6) i, pp. 346 & 347.

Emydura albertisii, n. sp., BOULENGER, Ann. Mus. Genov. (2) vi, p. 449, S.E. New Guinea.

Chelodina novae-guineae, n. sp., *id.* t. c. p. 450, S.E. New Guinea.

Erymnochelys, n. n. for *Dumerilia*, Grand., *nec* Bocage; BAUR, Zool. Anz. xi, p. 421.

Miolania, Owen (foss.): note by A. S. WOODWARD, Ann. N. H. (6) i, pp. 85-89. *M. oweni*, n. n. for the skull and tail-sheath referred by Owen to *Megalania priaca*; *id.* t. c. p. 89. *M. platyceps*, Ow.: further notes, with figures of the skull and tail-sheath; OWEN, Phil. Tr. clxxix, pp. 181-191, pls. xxxi-xxxvii.

Proganochelys quenstedtii, Baur (foss.): further notes by BAUR, Zool. Anz. xi, p. 417.

CRYPTODIRA.

P. FISCHER, C.R. cvii, pp. 458-460, remarks on the dermal ossifications of the limbs of *Testudo perpini*, Depéret, as compared with the living species of *Testudo*.

Testudo leithii, Gthr.: on the dermal ossifications of the fore limb; BAUR, Science, xi, p. 144. *T. polyphemus*, Daud., and *berlandieri*, Ag.: remarks by A. DUGÈS, Nat. Mex. (2) i, pp. 144 & 145.

Manouria, Gray: BAUR, Zool. Anz. xi, p. 396, regards this genus as the type of a distinct subfamily of *Testudinidae*, *Manouriina*, equivalent with the *Testudinina*, *Emydina*, and *Terrapenina*.

Homopus signatus, Walb.: note by BOULENGER, Ann. N. H. (6) ii, p. 136. *H. femoralis*, n. sp., *id.* P. Z. S. 1888, p. 251, pl. xiv, Cradock, S. Africa.

Cinizys dorri, n. sp. (= *belliana*, Gray), LATASTE, Le Nat. x, p. 104, figs., & p. 228, Upper Senegal.

Cistudo (*Onychotria*) *mexicana*, Gray, is regarded as a valid species by A. DUGÈS, Nat. Mex. (2) i, p. 107.

Emys orbicularis, L.: on its occurrence near Moscow; GREVÉ, Zool. Gart. xxix, p. 54: in Mecklenburg; K. KRAUSE, Arch. Ver. Mecklenb. xli, p. 222.

Dermatemys, Gray: BAUR, Zool. Anz. xi, p. 394, discusses the systematic position of this genus, which should rank as a distinct family, near the *Chelydridae*.

Cinosternum integrum, Leconte, noticed and figured under the name of *C. pennsylvanicum*, by A. DUGÈS, Nat. Mex. (2) i, p. 100, pl. xi, figs. 1-4.

Chelone hoffmanni, Gray (foss.): notes on the skull; UBAGHS, Bull. Soc. Belg. Géol. ii, p. 383, figs., pls. x-xiii.

Allopleuron, n. g., for *Chelone hoffmanni*, Gray (foss.); BAUR, Science, xi, p. 144.

Colpochelys, Garm. : notes by BAUR, Zool. Anz. xi, p. 423.

Euclastes, Cope (foss.) (= *Lytoloma*, Cope, *Puppigerus*, Cope, *Glossochelys*, Seeley, *Pachyrhynchus*, Dollo, *Erquelimesia*, Dollo) : further notes by DOLLO, Geol. Mag. (3) v, pp. 261-267, figs., and Bull. Soc. Géol. Nord. xv, pp. 114-122.

ATHECÆ.

Dermochelys, Blainv. : this name has priority ; BAUR, Zool. Anz. xi, p. 44.

Psephophorus sculdii, Van Ben., and *rupeliensis*, Van Ben. (foss.) : humerus figured, by DOLLO, Bull. Mus. Belg. v, pl. iv. The paper on *Psephophorus*, noticed in the preceding report, is republished in the same volume, pp. 59-96.

ICHTHYOSAURIA.

LYDEKKER, R. Note on the Classification of the *Ichthyopterygia*. Geol. Mag. (3) v, pp. 309-314 & 453.

Ophthalmosaurus cantabrigiensis, n. sp., *id. t. c.* p. 312, Cambridge Greensand.

E. FRAAS describes and figures the fin of *Ichthyosaurus quadriscissus*, Q., from an impression showing the shape and extent of the soft parts ; JH. Ver. Württ. xlv, p. 280, pl. vii.

Ichthyosaurus conybeari, n. sp., LYDEKKER, l. c., Lower Lias, England. *I. marathonensis*, n. sp., R. ETHERIDGE, JUN., P. Linn. Soc. N.S.W. (2) iii, p. 405, pl. vii, "Rolling Downs Formation," Northern Queensland. *I. ceramensis*, n. sp., K. MARTIN, Samm. Geol. Mus. Leid. iv, p. 74, pl. x, Ceram. *I. cornalianus*, n. sp., BASSANI, Atti Soc. Ital. xxix, p. 25 [1886], Trias of Lombardy.

PLESIOSAURIA.

SEELEY, H. G. On the Mode of Development of the Young in *Plesiosaurus*. Rep. Brit. Ass. 1887, p. 697.

LYDEKKER, R. Notes on the *Sauropterygia* of the Oxford and Kimridge Clays, mainly based on the Collection of Mr. Leeds at Eyebury. Geol. Mag. (3) v, pp. 350-356, figs., & 453.

Remarks by COPE, Am. Nat. xxii, pp. 724-726.

Plesiosaurus phillipsi, n. sp. (= *P. carinatus*, Phillips, *nec* Cuv.), SAUVAGE, Bull. Soc. géol. (3) xvi, p. 60, Upper Portlandian, Buckinghamshire and Boulogne.

On *Plesiosaurus* remains from the "Rolling Downs Formation" of Northern Queensland ; R. ETHERIDGE, JUN., P. Linn. Soc. N.S.W. (2) iii, p. 410, pl. viii.

RHYNCHOCEPHALIA.

DOLLO, L. Sur le Proatlas. Zool. Jahrb. iii, Anat. pp. 433-446.

Criticisms on J. Cornet's note on the proatlas of *Mammalia* and *Hatteria punctata*.

CREDNER, H. Die Stegocephalen und Saurier aus dem Rothliegenden des Plauen'schen Grundes bei Dresden. VII. Theil. Z. Deutsch. Geol. Ges. 1888, pp. 487-557, figs., pls. xxiv-xxvi.

Paleohatteria longicaudata, n. g. & sp., CREDNER, *l. c.*, for a Permian-Carboniferous Reptile showing affinities to, and, in fact, a connecting form between, the *Hatteridae* and the *Stegocephala* (especially *Hylonomus* and *Dendroperpeton*).

Typothorax coccinarum, Cope: notes by COPE, P. Am. Phil. Soc. xxiv, p. 210, pl. i.

THEROMORPHA.

SEELEY, H. G. On the Anomodont Reptilia and their Allies. [Abstract.] P. R. Soc. xlv, pp. 381-388.

The larger groups included in the Anomodont alliance are regarded as the *Pareiasauria* and *Procolophonina*; *Dicynodontia*, *Gennetotheria*, and *Pelycosauria*; the *Theriodontia*, *Cotylosauria*, and *Placodontia* are regarded as coming under the same subclass, which at one end of the series exhibits characters which link Reptiles with Amphibians, and at the other end of the series link Reptiles with Mammals.

— On *Pareiasaurus bombilens* (Owen) and the Significance of its Affinities to Amphibians, Reptiles, and Mammals. Phil. Tr. clxxix, pp. 59-109, pls. xii-xxi.

— On associated Bones of a small Anomodont Reptile, *Keirognathus cordylus* (Seeley), showing the relative dimensions of the anterior parts of the Skeleton, and Structure of the Fore-Limb and Shoulder-Girdle. T. c. pp. 487-501, figs., pls. lxxv & lxxvi.

Dicynodon sinocephalus, n. sp., WEITHOFER, Ann. Hofmus. Wien, iii, p. 1, pl. i, Karoo Formation, S. Africa.

INCERTÆ SEDIS.

Labyrinthodon rütimeyeri, Wiedersb., is a Reptile; ZITTEL, JB. Mineral. 1888, ii, p. 257.

BATRACHIA.

ZITTEL, K. A. Handbuch der Paläontologie. 1. Paläozoologie. Bd. III. Lief. 2.

Amphibia, pp. 337-436.

BAUR, G. Beiträge zur Morphogenie des Carpus und Tarsus der Vertebraten. I. Theil, *Batrachia*. Jena: 1888, 8vo, 86 pp., 3 pls.

Deals with the Batrachians, exclusive of the *Ecaudata*. In the introductory part the author proposes the following classification, suggested to him by COPE:—

Order I. GANOCEPHALA.

„ II. RHACHITOMI.

„ III. EMBOLOMERI.

„ IV. STEGOCEPHALI.

„ V. PROTEIDA. Fam. *Proteidae*.

„ VI. URODELA. Fams. *Cryptobranchidae*, *Sirenidae*, *Amphiumidae*, *Ceciliidae*, *Amblystomatinae*, *Plethodontidae*, *Desmognathidae*, *Salamandridae*, *Pleurodelidae*.

„ VII. ANURA.

COPE, E. D. On the Relations of the Hyoid and Otic Elements of the Skeleton in the Batrachia. J. Morph. ii, pp. 297–310, pls. xxii–xxiv. Abstract in Am. Nat. 1888, p. 464.

MAURER, F. Die Kiemen und ihre Gefässe bei anuren und urodelen Amphibien, und die Umbildungen der beiden ersten Arterienbogen bei Teleostiern. Morph. JB. xiv, pp. 175–222, figs., pls. ix & x.

HÉRON-ROYER, —. Sur la présence d'une enveloppe adventive autour des fèces chez les Batraciens. Bull. Soc. Zool. xiii, pp. 55–57, fig.

MAYER, S. Zur Lehre von der Schilddrüse und Thymus bei den Amphibien. Anat. Anz. iii, pp. 97–103.

°SCHANZ, F. Das Schicksal des Blastoporus bei den Amphibien. Inaug.-Diss. Jena: 1888, 8vo, 12 pp., 1 pl.

TÖRÖK, L. Die Theilung der rothen Blutzellen bei Amphibien. Arch. mikr. Anat. xxxi, pp. 603–613, pl. xxiii.

OSBORN, H. F. A Contribution to the Internal Structure of the Amphibian Brain. J. Morph. ii, pp. 51–96, pls. iv–vi.

DOGIEL, A. Ueber die nervösen Elemente in der Netzhaut der Amphibien und Vögel. Anat. Anz. iii, pp. 342–347, figs.

SUCHETET, A. L'hybridité dans la Nature. Rev. Quest. Sci. xii, pp. 175–244.

Batrachians, pp. 197–205.

ECAUDATA.

LATASTE, F. Sur la Classification des Batraciens anoures, à propos du système de M. le Dr. R. Blanchard. Zool. Anz. xi, pp. 236–240. Reply by R. BLANCHARD, t. c. pp. 358 & 359. Counter-reply by LATASTE, t. c. pp. 540–542.

ECKER, A. Die Anatomie des Frosches. Zweite Auflage. Erste Abth. Knochen und Muskellehre. Braunschweig: 1888, 8vo.

HOWES, G. B., & RIDEWOOD, W. On the Carpus and Tarsus of the Anura. P. Z. S. 1888, pp. 141-182, figs., pls. vii-ix.

HOWES, G. B. Note on the Azygos Veins in the Anurous Amphibia. T. c. pp. 122-126, fig.

The azygos (posterior cardinal) vein recently discovered by Hochstetter in *Bombinator* may be regarded as fairly distinctive of the *Discoglossidae*, being found in *Alytes* and *Discoglossus*. The author has also found it in an individual example of *Rana temporaria*.

*LUCOWICZ, C. VON. Versuche über die Anatomie des Froschherzens. Inaug.-Diss. Halle: 1888, 8vo, 29 pp.

*JORDAN, P. Die Entwicklung der vorderen Extremität der anuren Batrachier. Inaug.-Diss. Leipzig: 1888, 8vo, 55 pp.

SCHULZE, F. E. Ueber die innere Kiemen der Batrachierlarven. I. Mittheilung. Ueber das Epithel der Lippen, der Mundrachen- und Kiemenhöhle erwachsener Larven von *Pelobates fuscus*. Abh. Ak. Berl. 1888, 59 pp., 4 pls.

Remarks by O. ZACHARIAS, Biol. Centralbl. viii, pp. 580-582.

J. W. SPENGLER remarks that Goette was the first to notice the median spiraculum of the *Bombinator*-tadpole, and that to the median spiraculum corresponds a median anus, to the sinistral spiraculum a dextral anus. Zool. Anz. xi, pp. 338 & 339.

F. LATASTE, in reply, points out that the discovery of the median spiraculum was made by Pontallié (1852), and that Goette's generalisations as to the correspondence of the position of the spiraculum with that of the anus has been shown by Boulenger (1884) to be incorrect. T. c. pp. 427 & 428.

RIDEWOOD, W. G. On an abnormal Genital System in a Male of the Common Frog. Anat. Anz. iii, pp. 333-336.

SMIRNOW, A. Ueber Nervenendknäuel in der Froschlunge. T. c. pp. 258-261, figs.

HÉRON-ROYER, —. Essai sur la Transmission de la Coloration chez les Batraciens Anoures. Bull. Soc. Z. Fr. xiii, pp. 205 & 206.

KÖPFEN, M. Zur Anatomie des Froschgehirns. Arch. Anat. Phys. 1888, Anat. pp. 1-34, pls. i-iii.

HÉRON-ROYER, —. L'Accouplement du *Bufo viridis* et les phénomènes que présentent les cordons d'œufs de cet Anoure durant l'évolution de l'embryon. Bull. Soc. Z. Fr. xiii, pp. 26-31, figs., & p. 84.

SCHULTZE, O. Die Entwicklung der Keimblätter und der Chorda dorsalis von *Rana fusca*. Z. wiss. Zool. xlvii, pp. 325-352, pls. xxviii & xxix.

ROUX, W. Ueber die Lagerung des Materials des Medullarrohres im gefurchten Froschei. Anat. Anz. iii, pp. 697-704, figs.

— Zur Frage der Axenbestimmung des Embryo im Froschei. Biol. Centralb. viii, pp. 399-413.

RANIDÆ.

G. A. BOULENGER, P. Z. S. 1888, pp. 204-206, figs., distinguishes two groups among the *Ranidæ*, according to the presence or absence of a supplementary phalanx between the ultimate and the (normally) penultimate.

Rana, L.: on the hibernation of *R. temporaria* and *R. esculenta*; MAILLES, Bull. Soc. Z. Fr. xiii, p. 231. *R. esculenta*: L. CAMERANO, Boll. Mus. Zool. Anat. Comp. Torino, iii, No. 36, records an anomalous tadpole, in which the fore limbs were fully developed, whilst the hind limbs were still in a rudimentary condition: on a case of anomalous fusion of the 8th and 9th vertebræ; HELLER, Zool. Gart. xxix, p. 181: a case of polymely noticed by F. MAZZA, Atti Soc. Ital. xxxi, p. 144, pl. i. *R. esculenta*, var. *ridibunda*, Pall.: notes on Transcaspian specimens by BËTTGER, Zool. Jahrb. iii, p. 953, and WALTER, t. c. p. 796: on specimens from Greece and Asia Minor; BËTTGER, SB. Ak. Berlin, 1883, p. 145. On albino larvæ of *R. temporaria*; FISCHER-SIGWART, Arch. Sci. nat. (3) xix, pp. 350-352. *R. arvalis*, Nilss.: notes on specimens from Brunswick; HELLER, Zool. Gart. xxix, p. 177, fig. *R. agilis*, Thom., recorded from Hûchberg, on the Main, by LEYDIG, Verh. Ges. Würzb. (2) xxii, p. 12. *R. latastii*, Blgr., recorded from Bosnia and Greece, by BËTTGER, SB. Ak. Berlin, 1888, p. 148. *R. montezuma*, Baird, and *hulecina*, Kalm, described by A. DUGÈS, Nat. Mex. (2) i, pp. 136 & 137. *R. trivittata*, Hallow., = *macroductyla*, Gthr., BËTTGER, 26.-28. Ber. Offenb. Ver. p. 93. *R. macroscelis*, i, p. 345, New Guinea, *leithii*, ii, p. 506, Bombay, and *himalayana*, ii, p. 507, Darjeeling, n. spp., BOULENGER, Ann. N. H. (6).

Micrixalus, n. g., standing in the same relation to *Rana* as the typical *Ixali* to *Rhacophorus*, for *Ixalus opisthorhodus*, Gthr., and allies; *id.* P. Z. S. 1888, p. 205.

Cornufer johnstoni, n. sp., *id. op. cit.* 1887, p. 564, Cameroons.

Rhacophorus cruciger, Blyth, is distinct from *R. maculatus*, Gray; H. NEVILL, Taprobanian, iii, p. 6. *R. opisthodon*, p. 105, and *albilabris*, p. 105, pl. vi, fig. 1, n. spp., BOULENGER, Ann. N. H. (6) i, Madagascar.

Ixalus granulatus, n. sp., BËTTGER, 26.-28. Ber. Offenb. Ver., p. 57, Siam.

Rappia sordida, n. sp., J. G. FISCHER, JB. Hamb. v, p. 10, Cameroons.

Phyllobates, Bibr., is a Ranoid, closely allied to and intermediate between *Hylizalus*, Espada, and *Prostherapis*, Cope; BOULENGER, P. Z. S. 1888, p. 206.

DENDROBATIDÆ.

Dendrobates: BOULENGER, Ann. N. H. (6) i, p. 454, & ii, p. 122, remarks that the nursing habits, recently noticed by Cope, were observed long ago by Wilder and by Kappler.

Mantella baroni, n. sp., BOULENGER, Ann. N. H. (6) i, p. 106, pl. vi, fig. 2, Madagascar.

ENGYSTOMATIDÆ.

Rhinoderma darwini, D. & B. : notes on the gular brood-pouch of the male ; HOWES, P. Z. S. 1888, pp. 231-237, figs.

Engystoma leucostictum, n. sp., BOULENGER, Ann. N. H. (6) i, p. 416, Santa Catharina, Brazil.

Callulops, n. g., intermediate between *Callula* and *Xenobatrachus*. Pupil erect ; tongue oblong, entire, slightly free behind and on the sides ; palatine bones forming an acute ridge across the palate, armed with a series of small teeth ; a cutaneous denticulated ridge across the palate, in front of the œsophagus ; tympanum distinct ; fingers and toes free, tips swollen into small disks ; outer metatarsals united ; distal phalanges simple ; no precoracoids ; no omosternum ; sternum cartilaginous ; diapophyses of sacral vertebra feebly dilated. *C. doriae*, n. sp., *id. t. c.* p. 345, New Guinea.

DYSCOPHIDÆ.

Platypelis pollicaris, n. sp., BOULENGER, Ann. N. H. (6) i, p. 106, pl. vi, fig. 3, Madagascar.

CYSTIGNATHIDÆ.

Hylodes plicifera and *ramagii*, n. spp., BOULENGER, Ann. N. H. (6) ii, p. 41, Iguarasse, Pernambuco.

Leptognathus prognathus, n. sp., *id. op. cit.* i, p. 187, Rio Grande do Sul, Brazil.

Limnodynastes fletcheri, n. sp., *id. op. cit.* ii, p. 142, New South Wales.

Crinia victoriana, n. sp., *id. t. c.* p. 142, Victoria.

BUFONIDÆ.

Eupemphix nana, n. sp., BOULENGER, Ann. N. H. (6) i, p. 167, Santa Catharina, Brazil.

Bufo calamita, Laur., and *B. viridis*, Laur. : on the differential characters ; BEDRIAGA, Bull. Soc. Z. Fr. xiii, p. 220. *B. viridis*, Laur. : notes on Transcaspien specimens ; WALTER, Zool. Jahrb. iii, p. 983 : found in France (Savoie) ; R. BLANCHARD, Bull. Soc. Z. Fr. xiii, p. 66. *B. intermedius*, Gthr. : on its mode of copulation ; A. DUGÈS, *t. c.* p. 73. *B. speciosus*, Gir., is distinct from *B. compactilis*, Wiegman ; GARMAN, Bull. Ess. Inst. xix, p. 136. *B. compactilis*, Wgm., described by A. DUGÈS, Nat. Mex. (2) i, p. 139. *B. superciliaris*, n. sp., BOULENGER, P. Z. S. 1887, p. 565, Cameroons.

Rhinophrynus dorsalis, D. & B. : notes by A. DUGÈS, Nat. Mex. (2) i, p. 156, pl. xv.

HYLIDÆ.

Hyla orata, Cope : notes by J. G. FISCHER, JB. Hamb. v, p. 44. *H. copii*, Blgr., is identified with *H. arenicolor*, Cope, in Am. Nat. 1888, p. 80 ;

remarks by BOULENGER, Ann. N. H. (6) i, p. 189. *H. chinensis*, Gthr., n. var. *immaculata*; BËTTGER, Ber. Senck. Ges. 1888, p. 189, Shanghai. *H. arborea*, var. *japonica*, Schleg., figured by BOULENGER, P. Z. S. 1887, pl. li, fig. 2. *H. stephensi*, n. sp., *id. t. c.* p. 578, pl. li, fig. 1, Port Hamilton, Corea. *H. bivittata*, p. 188, and *cutharinae*, p. 417, n. spp., *id.* Ann. N. H. (6) i, Santa Catharina, Brazil.

Nototrema fissipes, n. sp., *id. op. cit.* ii, p. 42, pl. iii, Iguarasse, Pernambuco.

PELOBATIDÆ.

Scaphiopus solitarius, Holbr.: notes on habits; C. W. HARGITT, Am. Nat. xxii, p. 535.

Pelobates latifrons, n. sp. [= *insubricus*, Cornalia], HÉRON-ROYER, Bull. Soc. Z. Fr. xiii, pp. 85, 108, & 117, figs., North Italy. Regarded as identical with, or a mere variety of, *P. fuscus*, Laur.; BOULENGER, *t. c.* pp. 115 & 163; PERACCA, Boll. Mus. Zool. Anat. Comp. Torino, 1888, No. 46; WOLTERSTORFF, Zool. Anz. xi, p. 672.

DISCOGLOSSIDÆ.

Discoglossus auritus, n. sp., for the Algerian specimens, HÉRON-ROYER, Bull. Soc. Z. Fr. xiii, pp. 205 & 220.

Bombinator, Laur.: further notes on the synonymy and geographical distribution of the two European species, which should bear the names of *B. igneus*, Laur., and *B. pachypus*, Fitz.; BOULENGER, *t. c.* pp. 173-176.

DACTYLETHRIDÆ.

Xenopus laevis, Daud.: note on a living specimen; BOULENGER, P. Z. S. 1887, p. 563.

CAUDATA.

BARFURTH, D. Die Regeneration des Amphibienschwanzes. Anat. Anz. iii, pp. 403-405.

FLEMMING, W. Weitere Beobachtungen über die Entwicklung der Spermatozomen bei *Salamandra maculosa*. Arch. mikr. Anat. xxxi, pp. 71-97, pl. vii.

HOUSSAYE, F., & BATAILLON, —. Formation de la gastrula, du mésoblaste et de la chorde dorsale chez l'Axolotl. C.R. clvii, pp. 134-136.

CHALANDE, J. La Fécondation chez les Tritons. Bull. Soc. Toulouse, xxi, pp. xii-xiv.

Observations on *Molge palmata*.

Molge strauchii, Sldr., described and figured by STEINDACHNER, SB. Ak. Wien, xcvi, p. 69, pl. i. *M. palmata*, Schn. (*helvetica*, Raz.): notes by LEYDIG, Verh. Ges. Würz'. (2) xxii, p. 191. *M. sinensis*, Gray: notes

by BRETHER, 26.-28. Ber. Offenb. Ver. p. 100. *M. meridionalis*, Cope : notes by BOULENGER, ANN. N. H. (6) i, p. 24.

Megalotriton filholi, n. g. & sp. (foss.), for vertebræ and limb-bones from the Quercy phosphorites; ZITTEL, Handb. Pal. iii, p. 420, fig. 410.

Amblystoma carolinæ (= *tigrinum*, Green) and its branchiate form, *Siredon edulis*, Hern. : notes by A. DUGÈS, Nat. Mex. (2) i, pp. 140-143.

Amphiuma means, L. : observations by O. P. HAY, Am. Nat. xxii, pp. 315-321. The eggs are deposited in strings resembling a rosary, and the mother coils herself round the egg-mass.

Proteus anguineus, Laur. : notes on the larvæ; E. ZELLER, Zool. Anz. xi, pp. 570-572.

APODA.

Siphonops hardyi, n. sp., BOULENGER, ANN. N. H. (6) i, p. 18, Rio Janeiro.

STEGOCEPHALA.

ZITTEL (*cf. supra*, p. 22) arranges the members of this Order as follows:—

Subord. I. LETOSPONDYLI.

Fams. *Branchiosauridae*, *Microsauria*, *Aistopoda*.

Subord. II. TEMNOSPONDYLI.

Subord. III. STEREOSPONDYLI.

Fams. *Gastrolepidoti*, *Labyrinthodonti*.

CORP, E. D. On the Shoulder-Girdle and Extremities of *Eryops*. Tr. Am. Phil. Soc. (2) xvi, pp. 262-367, pl. —.

Eupelor durus, Cope : note by CORP, P. Am. Phil. Soc. xxiv, p. 209.

PISCES.

BY

G. A. BOULENGER.

GENERAL.

VAILLANT, L. Expéditions scientifiques du Travailleur et du Talisman pendant les années 1880, 1881, 1882, 1883. Poissons. Paris: 1888, 4to, 406 pp., 28 pls.

In this extensive work, following closely upon Günther's 'Challenger' report, which could only be used by the author when the whole of the plates and part of the text had passed through the press, numerous discrepancies occur in the nomenclature as compared to that of the latter work; but in an appendix, an attempt is made at bringing the two more in accordance. The names quoted in the systematic portion of the present Record are therefore, in many cases, those used in the appendix. The depths at which the specimens are supposed to have been obtained are given in metres.

AGASSIZ, A. Three Cruises of the United States Coast and Geodetic Survey Steamer 'Blake.' Boston and New York: 1888, 8vo, 2 vols. Also issued in Bull. Mus. C. Z. xiv & xv.

Chapter xv (vol. ii, pp. 21-36, figs. 195-224) is devoted to Sketches of the Characteristic Deep-Sea types of Fishes, from notes by GOODE & BEAN. The figures are taken from these authors' forthcoming Memoir.

SCHARFF, R. F. Review of Dohrn's Theories on the Origin of the Vertebrates. P. R. Dubl. Soc. (2) vi, pp. 14-38.

BEARD, J. The old Mouth and the new. A Study in Vertebrate Morphology. Anat. Anz. iii, pp. 15-24.

GADOW, H. On the Modifications of the First and Second Visceral Arches, with especial reference to the Homologies of the Auditory Ossicles. Phil. Tr. clxxix, pp. 451-485, pls. lxxi-lxxiv.

LAVOCAT, A. Appareil operculaire des Poissons. Mém. Ac. Toulouse (8) x, pp. 62-76.

STEINER, J. Die Funktionen des Zentralnervensystemes und ihre Phylogenese. Zweite Abteilung: Die Fische. Braunschweig: 1888; abstr. in Biol. Centralbl. viii, pp. 524-531.

BELLONCI, J. Ueber die centrale Endigung des Nervus opticus bei den Vertebraten. *Z. wiss. Zool.* xlvii, pp. 1-46, pls. i-viii.

Fishes, pp. 13-16.

MORENO, J. M. Sobre las Terminaciones nerviosas periféricas en la Mucosa olfatoria de los Peces. *An. Soc. Esp.* xvii, pp. 305-309.

LEYDIG, F. Nervenendkörperchen in der Haut der Fische. *Zool. Anz.* xi, pp. 40-44.

SANFELICE, F. Spermatogenesi dei Vertebrati. *Boll. Soc. Nat. Napoli*, ii, pp. 42-98, pls. i-iii.

Fishes, pp. 79-83.

QUATREFAGES, A. DE. Mémoire sur la Monstruosité double chez les Poissons. *Mém. Cent. Soc. Philom.* pp. 3-34, pls. vii & viii.

LO BIANCO, S. Notizie biologiche riguardanti specialmente il periodo di maturità sessuale degli animali del golfo di Napoli. *MT. z. Stat. Neap.* viii, pp. 385-440.

Fishes, pp. 427-440.

BOUVIER, E. L. Le Mimétisme chez les Poissons. *Le Nat.* x, pp. 17-20, figs.

SUCHETET, A. L'hybridité dans la Nature. *Rev. Quest. Sci.* xii, pp. 175-244.

Fishes, pp. 188-197.

K. KNAUTHE, *Zool. Gart.* xxix, pp. 71-73 & 142-148, remarks on the endurance of Fish in pools the water of which has been completely frozen up.

CUNNINGHAM, J. T. Preliminary Inquiries at Plymouth into the Marine Fauna and the Ova of Fishes. *J. Mar. Biol. Ass.* i, pp. 194-201.

HENSHALL, J. A. On some Peculiarities of the Ova of Fishes. *J. Cincinnati Soc.* xi, pp. 81-85.

SAUVAGE, H. E. Sur la Nourriture de quelques Poissons marins. *Bull. Soc. Acclim.* (4) v, pp. 673-677.

ROBERTSON, D. The Food of Fishes. *P. N. H. Soc. Glasg.* (2) i, pp. 146-150.

D. S. JORDAN, *P. U. S. Nat. Mus.* x, pp. 480 & 481, remarks on certain generic names proposed by Rafinesque in his "Analyse de la Nature," in 1815.

T. SALVADORI, *Boll. Mus. Zool. Anat. Comp. Torino*, iii, No. 48, gives the dates of publication of the various (30) fascicles of Bonaparte's *Fauna Italica* (1832-41).

A new edition of G. NEUMAYER'S *Anleitung zu wissenschaftlichen Beobachtungen auf Reisen* (Berlin: 1880, 8vo) contains instructions on the collecting and preserving of Fishes, by A. GÜNTHER, pp. 418-427.

FAUNÆ.

EUROPE.

LILLJEBORG, W. *Sveriges och Norges Fiskar*. Upsala : 8vo.

Part 5 (pp. 417-788), containing the conclusion of the *Anacanthini* and the Physostomous families *Scombresocidæ*, *Esocidæ*, and *Salmonidæ*, was issued in 1888.

HARVIE-BROWN, J. A., & BUCKLEY, T. E. *A Vertebrate Fauna of the Outer Hebrides*. Edinburgh : 1888, 8vo.

Fishes, pp. 172-225.

GÜNTHER, A. Report on the Fishes obtained by Mr. J. Murray in Deep Water on the North-West Coast of Scotland, between April, 1887, and March, 1888. P. R. Soc. Edinb. xv, pp. 205-220, pls. iii & iv.

SMITH, W. A. Observations on some West-Coast [Scottish] Fishes. P. N. H. Soc. Glasg. (2) i, pp. 100-104.

SAUVAGE, H. E. Catalogue des Poissons des côtes du Boulonnais. Bull. Soc. Z. Fr. xiii, pp. 142-145, and Bull. Sci. Nord. i, pp. 438-443.

GIARD, A. Observations sur le Catalogue des Poissons du Boulonnais. Bull. Sci. Nord, i, pp. 444-460.

GEISENHÄYNER, L. Wirbelthierfauna von Kreuznach. 1. Theil. Fische, Amphibien, Reptilien. Wiss. Beilage z. Programm des k. Gymnasiums zu Kreuznach, 1888. [Cf. Zool. Gart. xxix, p. 95.]

OSORIO, B. Additamento ao Catalogo dos Peixes de Portugal. J. Sci. Lisb. xii, pp. 167-185.

CARRERA, A. Ictiologia ibérica. Memoria de los "Peces del Mar de Andalucia": autógrafo inedito. Rev. Cien. Madrid, xxii, 1887, pp. 141-189.

A list, edited by M. GRAEELS. Some 40 new specific names occur, but unaccompanied by proper descriptions.

PALACKÝ, J. Ueber die Tiefseefische des westlichen Mittelmeeres. SB. böhm. Ges. 1887, pp. 329-333.

DE-CARLINI, A. Vertebrati della Valtellina. Atti Soc. Ital. xxxi, pp. 17-90. Fishes, pp. 85-90.

WARPACHOWSKI, N. Notiz über die in Russland vorkommenden Arten der Gattung *Phoxinus*. Mém. biol. xii, pp. 685-690, or Bull. Ac. St. Petersb. xxxii [1887], pp. 533-536.

ASIA.

HERZENSTEIN, S. Wissenschaftliche Resultate der von N. M. Przewalski nach Central-Asien unternommenen Reisen. Zoologischer Theil. Band III. Abth. 2, Fische. Lief. 1. St. Petersburg : 1888, 4to, 91 pp., 8 pls.

This first fascicle deals with the *Cobitidina* (*Nemachilus*). Text in Russian and in German.

4 *Pisces.*

PISCES.

NIKOLSKY, A. M. On the Vertebrate Fauna of the Balkash District. [Russian text.] Trudui St. Petersburg Nat. xix (1887), pp. 59-188. Fishes, pp. 162-188.

GÜNTHER, A. Contribution to our Knowledge of the Fishes of the Yangtze-Kiang. Ann. N. H. (6) i, pp. 429-435.

BOULENGER, G. A. An Account of the Fishes obtained by Surgeon-Major A. S. G. Jayakar at Muscat, East Coast of Arabia. P. Z. S. 1887, pp. 653-667, pl. liv.

DAY, F. Supplement to the Fishes of India. London: 1888, 4to, pp. 779-816.

[Cf. Zool. Rec. xv, *Pisces*, p. 5.] 64 species are added, many being described as new.

—, Observations on the Fishes of India. Part i. P. Z. S. 1888, pp. 258-265.

Synonymic notes and descriptions of new species.

GOGORZA Y GONZÁLEZ, J. Datos para la Fauna Filipiana. An. Soc. Esp. xvii, pp. 247-303.

List of Fishes, pp. 281-303.

AFRICA.

HILGENDORF, F. Die Fische der Azoren. Arch. f. Nat. liv, pp. 205-213.

—, Fische aus dem Victoria-Nyanza, gesammelt von dem verstorbenen Dr. G. A. Fischer. SB. nat. Fr. 1883, pp. 75-78.

GRANDIDIER, A. Histoire physique, naturelle et politique, de Madagascar. Paris: 4to.

Vol. xvi. Histoire naturelle du Poisson, par H. SAUVAGE. Only two fascicles of the Atlas (50 pls.) were issued in 1888.

AMERICA.

GOODE, G. B. American Fishes. A Popular Treatise upon the Game and Food Fishes of North America, with especial Reference to Habits and Methods of Capture. New York: 1888, 8vo, 493 pp., and numerous illustrations.

°HARRIS, W. C. The Fishes of North America. New York: 1888, 8vo, 80 pls.

JORDAN, D. S. A Manual of the Vertebrate Animals of the Northern United States, including the district North and East of the Ozark Mountains, South of the Laurentian Hills, North of the Southern Boundary of Virginia, and East of the Missouri River; inclusive of Marine Species. Fifth Edition, entirely rewritten and much enlarged. Chicago: 1888, 8vo, 375 pp.

Fishes, pp. 8-173.

- EIGENMANN, C. H. & R. S. A List of the American Species of *Gobiidæ* and *Callionymidæ*, with Notes on the Specimens contained in the Museum of Comparative Zoology, at Cambridge, Massachusetts. P. Cal. Ac. (2) i, pp. 51-78.
- HENSHALL, J. A. Contributions to the Ichthyology of Ohio. No. 1. J. Cincinn. Soc. xi, pp. 76-80.
- BEAN, T. H. Report on the Fishes observed in Great Egg Harbour Bay, New Jersey, during the summer of 1887. Bull. U. S. Fish Comm. vii, pp. 129-154, pls. i-iii.
- EVERMANN, B. W., & JENKINS, O. P. Notes on Indiana Fishes. P. U. S. Nat. Mus. xi, pp. 43-57.
- EIGENMANN, C. H. & R. S. Preliminary Notes on South American *Nematognathi*. I. P. Cal. Ac. (2) i, pp. 119-172.
- VAILLANT, L. Mission scientifique du Cap Horn, 1882-1883. Tome VI. Zoologie. Poissons. Paris: 1888, 4to, 35 pp., 4 pls.

AUSTRALIA.

J. DOUGLAS-OGILBY has compiled a list of the Fishes of New South Wales, with their principal synonyms, which is published as Appendix A, in the Report of the Commissioners of Fisheries for New South Wales, 1887.

DOUGLAS-OGILBY, J. On a small Zoological Collection from Norfolk Island. Fishes. P. Linn. Soc. N.S.W. (2) ii, pp. 990-993.

PALÆONTOLOGICAL.

ZITTEL, K. A. Handbuch der Palæontologie. I. Palæozoologie. Bd. III. Lief. 2.

Pp. 257-337 conclude the account of the Fishes.

WOODWARD, H. Guide to the Collection of fossil Fishes in the Department of Geology and Palæontology, British Museum (Natural History). Second Edition. London: 1888, 8vo, 51 pp., woodcuts.

WOODWARD, A. S. A Synopsis of the Vertebrate Fossils of the English Chalk. P. Geol. Ass. x, pp. 273-338, pl. i.

Fishes, pp. 285-338.

— A Comparison of the Cretaceous Fish-fauna of Mount Lebanon with that of the English Chalk. Abstract of a Paper read at the 1888 Meeting of the British Association. Ann. N. H. (6) ii, pp. 354 & 355, and Geol. Mag. (3) v, pp. 471 & 472.

TRAQUAIR, R. H. Notes on the Nomenclature of the Fishes of the Old Red Sandstone of Great Britain. Geol. Mag. (3) v, pp. 507-517.

DAIMERIES, D. Notes ichthyologiques (Systèmes Landenien et Meersien). P.-v. Soc. Mal. Belg. 1888, pp. li, lii, & liv-lviii.

A list of species.

1888. [VOL. XXV.]

DOLLO, L., & STORMS, R. Sur les Téléosteens du Rupélien. Zool. Anz. xi, pp. 265-267.

BASSANI, F. Sui Fossili e sull'età degli Schisti bituminosi triasici di Besano in Lombardia. Comunicazione preliminare. Atti Soc. Ital. xxix, pp. 15-72, 1886. [Omitted from Zool. Rec. xxiii.]

KOKEN, E. Neue Untersuchungen an tertiären Fisch-Otolithen. Z. geol. Ges. 1888, pp. 274-305, pls. xvii-xix.

On Fish-otolithes from the Lower Tertiary of North America. The following are described as new under the provisional term *Otolithus* :—*O. (Carangidarum) americanus*, *O. (Apogonidarum) hospes*, *O. (Pagelli) elegantulus*, *O. (Sparidarum) insuetus*, *O. (Scienidarum) radians*, *gemma*, *eporrectus*, *claybornensis*, *intermedius*, *similis*, and *decipiens*, *O. (Trachini) lavigatus*, *O. (Cottidarum) sulcatus*, *O. (Triglæ) cor*, *O. (Cepolæ) comes*, *O. (Mugilidarum) debilis*, *O. (Gadidarum) meyeri*, *elevatus*, and *mucronatus*, *O. (Platessa) sector*, *O. (Solea) glaber*, *O. (Congeris) brevior*.

DAVIS, J. W. On Fossil-Fish Remains from the Tertiary and Cretaceous-Tertiary Formations of New Zealand. Tr. R. Dubl. Soc. (2) iv, pp. 1-48, pls. i-vii.

PALÆICHTHYES.

DOUGLAS-OGILBY, J. Catalogue of the Fishes in the Collection of the Australian Museum. Part i: Recent Palæichthyan Fishes. Sydney: 1888, 8vo, 26 pp.

A list of 109 species.

ICHTHYOTOMI.

The name *Pleuracanthides* is proposed for an Order or Subclass, representing a group ancestral to and synthetic of the Plagiostomes, Chimæroids, Dipnoi, and Cartilaginous Ganoids; to include *Pleuracanthus*, Ag.; C. BRONGNIART, C.R. cvi, p. 1242.

Pleuracanthus gaudryi, n. sp., *id. ibid.*, and Le Nat. x, p. 178, fig., Coal-Measures of Commeny, France. Remarks by A. S. WOODWARD, Geol. Mag. (3) v, p. 422.

Xenacanthus decheni, Goldf. (foss.): note on the pectoral fin, which bears considerable resemblance to that of *Ceratodus*; A. FRITSCH, Zool. Anz. xi, p. 113, fig.

See TRAQUAIR, *infra*, p. 9.

CHONDROPTERYGII.

GARMAN, S. On the Lateral Canal System of the Selachia and Holocephala. Bull. Mus. C. Z. xvii, pp. 57-119, pls. i-liii.

A comparative investigation of the canal system in the principal genera of Plagiostomes and Chimæroids, from a morphological and systematic point of view.

- WOODWARD, A. S. Palaeontological Contributions to Selachian Morphology. P. Z. S. 1888, pp. 126-129, fig.
- On the lateral line of a Cretaceous species of *Scylliidae*, and on the pelvic cartilage of *Cyclobatis*.
- FRITSCH, G. Ueber Bau und Bedeutung der Kanalsysteme unter der Haut der Selachier. SB. Ak. Berlin, 1888, pp. 273-306.
- BEARD, J. A contribution to the morphology and development of the nervous system of Vertebrates. Anat. Anz. iii, pp. 874-905.
- The cranial ganglia of *Elasmobranchii*, pp. 881-901.
- KASTSCHENKO, N. Zur Entwicklungsgeschichte des Selachierembryos. T. c. pp. 445-467.
- WIJHE, J. W. VAN. Ueber die Entwicklung des Exkretionssystemes und anderer Organe bei Selachiern. T. c. pp. 74-76.
- RÜCKERT, J. Ueber die Entstehung der Excretionsorgane bei Selachiern. Arch. Anat. Phys. 1888, Anat. pp. 205-278, pls. xiv-xvi.
- WIJHE, J. W. VAN. Bemerkung zu Dr. Rückert's Artikel über die Entstehung der Excretionsorgane bei Selachiern. Zool. Anz. xi, pp. 539 & 540.
- RÜCKERT, J. Ueber die Entstehung der endothelialen Anlagen des Herzens und der ersten Gefässstämme bei Selachier-Embryonen. Biol. Centralbl. viii, pp. 385-399 & 417-430.
- ZIEGLER, H. E. Der Ursprung der mesenchymatischen Gewebe bei den Selachiern. Arch. mikr. Anat. xxxii, pp. 378-400, pl. xiii.
- MAYER, P. Ueber Eigenthümlichkeiten in den Kreislaufsorganen der Selachier. MT. z. Stat. Neap. viii, pp. 307-373, pls. xvi-xviii.
- On the circulation in the tail and vertical fins, and on the so-called "Lymphgefäßsystem."
- DOHRN, A. Studien zur Urgeschichte des Wirbelthierkörpers. xiv. Über die erste Anlage und Entwicklung der motorischen Rückenmarksnerven bei den Selachiern. T. c. pp. 441-462, pl. xiv.
- KASTSCHENKO, N. Zur Frage über die Herkunft der Dotterkerne im Selachierei. Anat. Anz. iii, pp. 253-257, pl. i.

SELACHOIDEI.

- Carcharias hemiodon*, M. & H.: on its occurrence on the Coast of South Australia; A. ZIETZ, Tr. R. Soc. S. Austr. x, p. 303. *C. glaucus*, L.: on the occurrence of a tooth in the brick-earth of Crayford, Kent; A. S. WOODWARD, Geol. Mag. (3) v, p. 528. *C. macrurus*, Rams. & Ogilby: correction of a *lapsus calami* in the original description; RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 1024.
- Galeocерdo aculeatus*, n. sp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iv, p. 8, pl. i, figs. 1-3, Tertiary, New Zealand.
- Lamna daviesii*, n. sp. (foss.), R. ETHERIDGE, JUN., P. Linn. Soc. N.S.W. (2) iii, p. 159, "Rolling Downs Formation," Northern Queens-

land. *L. huttoni*, p. 15, pl. iii, fig. 1, *incurva*, p. 17, pl. iii, figs. 2-5, *ensiculata*, p. 18, pl. iii, figs. 6 & 7, *marginalis*, p. 19, pl. iii, figs. 8-10, *attenuata*, p. 19, pl. iii, fig. 11, *lanceolata*, p. 20, pl. iii, fig. 12, *carinata*, p. 21, pl. iii, fig. 13, and *hectori*, p. 21, pl. iii, fig. 16, n. spp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iv, Tertiary, New Zealand.

Oxyrhina haastii, p. 26, pl. iv, figs. 1-3, *recta*, p. 27, pl. v, fig. 14, *enysii*, p. 28, pl. v, figs. 17-20, *acuminata*, p. 29, pl. v, fig. 21, *grandis*, p. 30, pl. v, figs. 15 & 16, *fastigata*, p. 30, pl. vi, figs. 1-3, *subvexa*, p. 31, pl. vi, fig. 4, and *lata*, p. 32, pl. vi, fig. 5, n. spp. (foss.), *id. t. c.*, Tertiary, New Zealand.

Otodus appendiculatus, Ag. (foss.): note on a tooth from the "Rolling Downs Formation" of Northern Queensland; R. ETHERIDGE, JUN., P. Linn. Soc. N.S.W. (2) iii, p. 158.

Carcharias leucas, Benn., = *Carcharodon rondeletii*; DOUGLAS-OGILBY, P. Z. S. 1887, p. 615.

Carcharodon robustus, n. sp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iv, p. 13, pl. i, fig. 7, Tertiary, New Zealand.

Odontaspis americana, Mitch.: notes by LEIDY, P. Ac. Philad. 1888, p. 162. *O. acuta*, p. 22, pl. v, figs. 1 & 2, *exigua*, p. 23, pl. v, figs. 3-5, *kaikoraensis*, p. 24, pl. v, figs. 6-10, and *sulcata*, p. 25, pl. v, figs. 11-13, n. spp. (foss.), DAVIS, *t. c.*, Tertiary, New Zealand.

Notidanus marginalis, n. sp. (foss.), *id. t. c.* p. 34, pl. vi, figs. 7 & 8, Tertiary, New Zealand.

Scyllium chilense, Guich.: noticed and figured by VAILLANT, Miss. Cap Horn, Poiss. p. 10, pl. i, fig. 1.

Scyllium? spinacipellitum and *acutidens*, n. spp., *id.* Expéd. Trav. & Talism. p. 60, pl. i, figs. 3 & 4, off Canary Is., 946-975 m.

Pristiurus atlanticus, n. sp. (= ? *P. melanostomus*, Lowe), *id. t. c.* p. 59, pl. i, fig. 1, Cape Spartel, 540 m.

Parascyllium collare, n. sp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) iii, p. 1310, Port Jackson.

Synechodus dubrisiensis, Mackie (foss.): notes by A. S. WOODWARD, Geol. Mag. (3) v, p. 495, fig.

Acrodus bicarinatus, n. sp. (foss.), BASSANI, Atti Soc. Ital. xxix, p. 31 (1886), Trias, Lombardy.

Leiocanthus (Hybodus) pinii, n. sp. (foss.), *id. t. c.*, Trias, Lombardy.

Asteracanthus, Ag.: notes on this fossil Selachian, the affinities of which are with *Hybodus* and *Acrodus*; *id.* Ann. N. H. (6) ii, pp. 336-342, pl. xii. *A. ornatissimus*, Ag., n. var. *flettonensis*, n. sp., *id. ibid.*, Oxford Clay, Fletton, near Peterborough.

Acanthias vulgaris, Risso: on the fœtus; SAUVAGE, Bull. Soc. Z. Fr. xiii, p. 219. *A. lebruni*, n. sp., VAILLANT, Miss. Cap Horn, Poiss. p. 13, pl. i, fig. 2, Cape Horn.

Centrophorus squamosus, L., and var. *dumerilii*, Johns.: notes and figures by VAILLANT, Expéd. Trav. & Talism. p. 69, pls. ii, fig. 3, & iii, figs. 2 & 3. *C. calceus*, Lowe, *id. t. c.* p. 71, pl. iii, fig. 1.

Scymnus acutus, n. sp. (foss.), for a tooth from the Upper Tertiary of New Zealand; J. W. DAVIS, Geol. Mag. (3) v, p. 315.

Centrosymnus calolepis, Boc. & Cap., described and figured by VAIL-

VAILLANT, t. c. p. 63, pl. ii, fig. 1. *C. obscurus*, n. sp., *id.* t. c. p. 67, pl. ii, fig. 2, Coast of Soudan, 1400 m.

Echinorhinus spinosus, L., figured by MCCOY, Prodr. Zool. Vict. pl. cxliv.

Nemacanthus tuberculatus, n. sp. (foss.), BASSANI, Atti Soc. Ital. xxix, p. 30 (1886), Trias, Lombardy.

R. H. TRAQUAIR, Geol. Mag. (3) v, pp. 81-86 & 101-104, has notes on Carboniferous Selachii: *Cladodus*, Ag., and *Ctenacanthus*, Ag., p. 81, *Dicentrodus*, n. g., for *Cladodus bicuspidatus*, Traq., p. 86, *Tristychius*, Ag., p. 83, *Helodus*, Ag., p. 84, *Cochliodontidae*, p. 84, *Callopristodus*, n. g., for *Ctenoptychius pectinatus*, Ag., p. 85, *Oracanthus*, Ag., p. 85, and *Oracanthus armigerus*, n. sp., p. 86, Carboniferous Limestone of Ayrshire, *Anodontacanthus*, J. W. Davis, and *Pleuracanthus*, Ag., p. 101, *Pristodus falcatus*, Davis, p. 101, *Pristicladodus*, McCoy, p. 103, and *Chondrenchelys problematica*, n. gg. & spp., p. 103, Eskdale beds.

BATODEI.

EWART, J. C. On the Development of the Electric Organ of *Raia batis*. Phil. Tr. clxxix, pp. 399-409, pls. lxvi & lxvii; abstract, P. R. Soc. xlv, pp. 120 & 121.

Description of the electric organs found in the Skate genus, with an account of the development of the electric organ of *Raia batis*.

—. On the Structure of the Electric Organ of *Raia circularis*. Phil. Tr. clxxix, pp. 410-416, pl. lxviii; abstract, P. R. Soc. xlv, pp. 213 & 214.

—. The Electric Organ of *Raia radiata*. Phil. Tr. clxxix, pp. 539-552, pls. lxxix & lxxx; abstract, P. R. Soc. xlv, pp. 308-310.

BURDON SANDERSON, J., & GOTCH, F. On the Electrical Organ of the Skate. J. Physiol. ix, pp. 137-166, figs.

GOTCH, F. Further Observations on the Electro-motive Properties of the Electrical Organ of *Torpedo marmorata*. Phil. Tr. clxxix, pp. 329-363, figs., pls. li & lii.

BOIS-REYMOND, E. DU. Bemerkungen über einige neuere Versuche an *Torpedo*. SB. Ak. Berlin, 1888, pp. 531-554.

PERÉNYI, J. Beiträge zur Entwicklung der Rückensaiten (Chorda dorsalis) und der perichordalen Gebilde bei *Torpedo marmorata*. Math. Nat. Ber. Ung. iv, pp. 214-216 (1837), & v, pp. 218-240, pls. i-iv.

F. HILGENDORF, SB. nat. Fr. 1838, pp. 109 & 110, has remarks on the histology of the teeth of *Pristis*.

✓ *Amblypristis cheops*, n. g. & sp., for teeth from the Eocene of Egypt, apparently allied to *Pristis*; DAMES, t. c. p. 106, fig.

Dactylodus rossicus, n. sp. (foss.), A. V. INOSTRANZEFF, Tr. Soc. Nat. St. Petersb. xix, Geol. p. 15, pl. —, Chalk, Gov. Olonetz.

Raia fullonica, L., figured by VAILLANT, Expéd. Trav. & Talism. pl. iv, fig. 1. *B. brachyura*, Gthr., noticed and figured by VAILLANT,

Miss. Cap Horn, Poiss. p. 14, pl. ii, fig. 1. *R. scabra*, n. n. for *R. rostrata*, Casteln., nec Lacép; DOUGLAS-OGILBY, Cat. Fish. Austr. Mus. i, p. 17.

Trygon ensifer, n. sp. (foss.), DAVIS, Tr. R. Dublin Soc. (2) iv, p. 37, pl. vi, figs. 13-15, Tertiary, New Zealand.

Pteroplutea australis, Rams. & Ogilby, is not a valid species; RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 1024.

Myliobatis, Cuv. : notes on the determination of the fossil teeth, with a revision of the English Eocene species; A. S. WOODWARD, Ann. N. H. (6) i, pp. 36-47, figs., pl. i. *M. latidens*, n. sp., *id. t. c.* p. 44, pl. i, figs. 11 & 12, Brackelsham Beds.

Myliobatis plicatilis, p. 39, pl. vi, figs. 16-19, *arcuatus*, p. 40, pl. vi, figs. 20 & 21, and *altus*, p. 40, pl. vii, figs. 1 & 2, n. spp. (foss.), DAVIS, *t. c.*, Tertiary, New Zealand.

Rhinoptera, Kuhl : note on an abnormal specimen of the dentition; A. S. WOODWARD, Ann. N. H. (6) i, pp. 281-283, fig.

HOLOCEPHALA.

Chimæra monstrosa, L. : young figured by VAILLANT, Expéd. Trav. & Talism. pl. iv, fig. 2. *C. neglecta*, n. sp., DOUGLAS-OGILBY, Cat. Fish. Austr. Mus. i, p. 23, hab.—?

✓ *Elasmodectes*, n. n. for *Elasmognathus*, E. T. Newton, nec Gray; A. S. WOODWARD, P. Geol. Ass. x, p. 301.

Cœlorhynchus, Ag. The fossil spines upon which this genus was founded are dorsal spines of a cartilaginous fish, and are referred provisionally to the Chimæroids. *Id.* Ann. N. H. (6) ii, pp. 223-226.

GANOIDEI.

DOGIEL, A. Ueber das Verhalten der nervösen Elemente in der Retina der Ganoiden, Reptilien, Vögel und Säugetiere. Vorläufige Mittheilung. Anat. Anz. iii, pp. 133-143, figs.

DAMES, W. Die Ganoiden des Deutschen Muschelkalks. Pal. Abh. iv, Heft 2, 50 pp., 6 pls.

PLACODERMI.

TRAQUAIR, R. H. On the Structure and Classification of the *Asterolepidæ*. Ann. N. H. (6) ii, pp. 485-504, pls. xvii & xviii.

Deals with the genera *Asterolepis*, *Pterichthys*, *Bothriolepis*, and *Microbrachius*.

Asterolepis, Eichw., *Pterichthys*, Ag., and *Bothriolepis*, Ag. (foss.) : notes by TRAQUAIR, Geol. Mag. (3) v, p. 508. *Bothriolepis giganteus* and *obesus*, n. spp., *id. t. c.* p. 510, Upper Old Red Sandstone, Scotland.

✓ *Microbrachius dickii*, n. g. & sp., *id. t. c.* p. 510, Lower Old Red Sandstone, Caithness.

Coccosteus, Ag. : notes by TRAQUAIR, *t. c.* p. 511.

Homosteus milleri, n. sp., *id. l. c.*

SCHLÜTER, C. Ueber Panzerfische aus dem rheinisch-westfälischen Devon. Verh. Ver. Rheinl. xlv, Sitzungsber. pp. 120-128.

✓ The following are described as new :—

Ceraspis, n. g., p. 120, for *C. carinatus*, p. 120, Middle Devonian of Eifel, and *C. hagenensis*, p. 122, n. spp.

Pteraspis rhenanus, n. sp., p. 125, Grauwacke, Rhenish Prussia.

Scaphaspis bonnensis, n. sp., p. 125, Lower Devonian, near Bonn.

Drepanaspis gemündenensis, n. sp., p. 126, Lower Devonian, Gemünden.

ACANTHODINI.

✓ *Mesacanthus*, n. g., for *Acanthodes pusillus*, Ag., *peachii*, Egert., and *mittelli*, Egert.; TRAQUAIR, Geol. Mag. (3) v, p. 511.

Chiracanthus, Ag., and *Diplacanthus*, Ag.: notes by TRAQUAIR, t. c. p. 512.

✓ *Rhadinacanthus*, n. g., for *Diplacanthus longispinus*, Ag., *id. l. c.*

Ischnacanthus Powrie, is a valid genus; *id. l. c.*

DIPNOI.

FRITSCH, A. Fauna der Gaskohle und der Kalksteine der Permformation Böhmens. Band II. Heft 3. (Pp. 66-92, pls. lxxi-lxxx.) Die Lurchfische, *Dipnoi*, nebst Bemerkungen über Silurische und Devonische Lurchfische. Prague: 1888, 4to.

The following forms are described and figured :—

Ctenodus obliquus, Hanc. & Atth. (= *Ceratodus barrandeii*, Fritsch), p. 66, *C. applanatus*, Fritsch, p. 85, and *C. trachylepis*, n. sp., p. 85.

✓ *Dipnoites perneri*, n. g. & sp., for a cranial bone from the Upper Silurian of Prague, p. 86.

Notes on *Gompholepis panderi*, Barr., p. 87, *Palædaphus insignis* and *devoniensis*, Van Ben. & De Kon., p. 88, *Phyllolepis concentricus*, Ag., p. 89, and *Archæonectes pertusus*, H. v. Mey., p. 90.

PARKER, W. N. Preliminary Note on the Anatomy and Physiology of *Protopterus annectens*. Nature, xxxix, pp. 19-21.

WIEDERSHEIM, R. On the Torpid State of *Protopterus*. Rep. Brit. Ass. 1887, pp. 738-740.

Translation of the paper noticed in the preceding Record (p. 12), where it was inadvertently referred to the heading *Polypteroidei*.

Protopterus annectens, Ow.: notes on habits in confinement; Ed. HECKEL, Le Nat. x, p. 233, figs.

Lepidosiren paradoxa, Fitz.: record of the discovery of another specimen; GIGLIOLI, Nature, xxxviii, p. 102; HOWES, t. c. p. 126.

Dipterus macropterus, n. sp. (foss.), TRAQUAIR, Geol. Mag. (3) v, p. 508, Lower Old Red Sandstone, Caithness.

CHONDROSTEL.

GORONOWITSCH, N. Das Gehirn und die Cranialnerven von *Acipenser ruthenus*. Ein Beitrag zur Morphologie des Wirbelthierkopfes. Morph. JB. xiii, pp. 427-514, pls. xvii-xxiii.

J. A. RYDER, Am. Nat. xxii, pp. 659 & 660, has notes on the development of *Acipenser sturio*.

POLYPTEROIDEI.

Notes on the *Holoptychiidae*, *Rhombodipteridae*, and *Saurodipterini*; TRAQUAIR, Geol. Mag. (3) v, pp. 512-516.

✓ *Thursius pholidotus*, n. g. & sp., *id. t. c.* p. 516, Old Red Sandstone, Thurso.

REISS, O. M. Die Cœlacanthinen, mit besonderer Berücksichtigung der im Weissen Jura Bayerns vorkommenden Gattungen. Palæontogr. xxxv, pp. 1-94, pls. i-v.

The following are the names of the new species:—

Undina acutidens, p. 10, pl. i, figs. 1-6 & 8-24.

Caccoderma gigas, p. 57, pl. iii, figs. 17-19.

PYCNODONTOIDEI.

JACCARD, A. Sur quelques espèces nouvelles de Pycnodontes du Jura Neuchatelois. Bull. Soc. Neuchatel, xvi, pp. 41-44.

LEPIDOSTEOIDEI.

O. REISS, SB. bayer. Ak. 1887, pp. 151-177, pls. i & ii, writes on the fossil genera *Belonostomus*, Ag., and *Aspidorhynchus*, Ag., and on their affinity to the living *Lepidosteus*.

Colobodus varius, Giebel, p. 30, pl. iv, fig. 2, *maximus*, Quenst., p. 32, pls. ii, fig. 3, iii, fig. 2, & iv, fig. 1, *chorsowensis*, p. 37, pl. vi a, figs. 1-8, noticed and figured by DAMES, *t. c.* *C. frequens*, n. sp., *id. t. c.* p. 26, pls. vi, fig. 1, & ii, figs. 4 & 5, Muschelkalk of Germany.

✓ *Crenilepis sandbergi*, n. g. & sp., for a fragment of scale from the Muschelkalk of Krainberg, Germany; *id. t. c.* p. 40, pl. v, fig. 3.

Serrolepis suevicus, n. n., *id. t. c.* p. 41, pl. iii, figs. 4-8.

BRANCO, W. Beiträge zur Kenntniss der Gattung *Lepidotus*. Abh. Geol. Specialkarte Preussen, vii, pp. 323-406, pls. i-vii [1887].

i. Die Lepidoten-Fauna des Wealden von Obernkirchen.

ii. *Lepidotus koeneni*, n. sp., und einige andere jurassische Arten.

iii. Uebersicht über die Arten der Gattung *Lepidotus*.

Lepidotus triasicus, n. sp., BASSANI, Atti Soc. Ital. xxix (1886), p. 38, Trias, Lombardy.

Pholidophorus barazzettii, p. 35, and *besanensis*, n. spp., *id. t. c.* Trias, Lombardy.

Nothosomus bellottii, n. sp., *id. t. c.* p. 37, Trias, Lombardy.

- Ptycholepis barboi*, n. sp., *id. t. c.* p. 38, Trias, Lombardy.
- Semionotus capensis*, n. sp. (foss.), A. S. WOODWARD, Q. J. Geol. Soc. xlv, p. 138, pl. vi, figs. 1-5, Stormberg Beds (Upper Karoo Series), S. Africa. *S. gibbus*, n. sp., BASSANI, *t. c.* p. 37, Tertiary, Lombardy.
- Cleithrolepis extoni*, n. sp., *id. t. c.* p. 141, pl. vi, figs. 6 & 7, Stormberg Beds, S. Africa.
- ✓ *Neorhombolepis excelsus*, n. g. & sp. (foss.), *id. P. Geol. Ass.* x, p. 304, pl. i, fig. 1, Lower Chalk of Halling, Kent.
- Amblyurus*, Ag. (foss.), = *Dapedius*, Ag.; *id. Ann. N. H.* (6) i, p. 356.
- Belonorhynchus*, Bronn (foss.): notes by A. S. WOODWARD, who regards this genus as bearing affinity with *Belonostomus*, forming a nearly related family, *Belonorhynchidæ*, which is characterized; *t. c.* pp. 354-356.
- Belonorhynchus stoppanii*, p. 34, *intermedius*, p. 34, and *barazzettii*, n. spp., BASSANI, *Atti Soc. Ital.* xxix (1886), Tertiary, Lombardy.
- TRAQUAIR, R. H. New *Palæoniscidae* from the English Coal-Measures. No. II. *Geol. Mag.* (3) v, pp. 251-254.
- Elonichthys binneyi*, n. sp., p. 251, Stanton, Derbyshire.
- Gonatodus molyneuxi*, n. sp., p. 252, Longton, Staffordshire.
- Rhadinichthys planti*, n. sp., p. 253, Colleyhurst, Longton, and Burnley.
- Acrolepis wilsoni*, n. sp., p. 254, Turnditch, Derbyshire.
- Gyrolepis agassizi*, p. 7, pl. iii, fig. 1, *ornatus*, Giebel, p. 10, pl. i, fig. 2, and *alberti*, p. 13, pls. i, fig. 1, ii, fig. 1, & v, fig. 1, described and figured by DAMES, *t. c.* *G. quenstedti*, n. sp., *id. t. c.* p. 22, pl. v, fig. 2, Muschelkalk, Biebersfeld, Germany.
- Chirolepis*, Ag.: only one species exists in the British Old Red Sandstone; TRAQUAIR, *Geol. Mag.* (3) v, p. 516.

INCERTÆ SEDIS.

- Onychodus anglicus*, n. sp. (foss.), A. S. WOODWARD, *Geol. Mag.* (3) v, p. 500, fig. for an intermandibular arch, or presymphysial bone from the Lower Old Red Sandstone Passage Beds, Ledbury, Herefordshire.

TELEOSTEI.

- MAURER, F. Die Kiemen und ihre Gefässe bei anuren und urodelen Amphibien, und die Umbildungen der beiden ersten Arterienbogen bei Teleostiern. *Morph. JB.* xiv, pp. 175-222, figs., pls. ix & x.
- VAILLANT, L. Les écailles du *Chaunax pictus*, Lowe, et du *Centriscus scolopax*, Linné. *Bull. Soc. Philom.* (7) xii, pp. 125-127.
- EMERY, C. Das Leuchtorgan am Schwanz von *Scopelus benoiti*. Erwiderung an Herrn Dr. R. von Lendenfeld. *Biol. Centralbl.* viii, pp. 228-230.
- CORNING, H. K. Beiträge zur Kenntniss der Wundernetzbildungen in den Schwimmblasen der Teleostier. *Morph. JB.* xiv, pp. 1-53, pls. i & ii.

- CHEVREL, R. Sur le système nerveux grand sympathique des poissons osseux. C.R. cvii, pp. 530 & 531.
- AUERBACH, L. Die Lobi optici der Teleostier und die Vierhügel der höher organisirten Gehirne. Morph. JB. xiv, pp. 373-393, pl. xvi.
- BELLONCI, J. Ueber die centrale Endigung des Nervus opticus bei den Vertebraten. Z. wiss. Zool. xlvii, pp. 1-46, figs., pls. i-viii.
Teleostei, pp. 13-16.
- W. C. MCINTOSH, Ann. N. H. (6) ii, p. 470, describes a post-larval *Cottus* from Scotland, contrasting it with *Gadoids* at a similar stage.
- RAFFAELE, F. Le uova galleggianti e le larve dei *Teleostei* nel golfo di Napoli. MT. z. Stat. Neap. viii, pp. 1-84, pls. i-v.
- PLATNER, G. Die erste Entwicklung befruchteter und parthenogenetischer Eier von *Liparis dispar*. Biol. Centralbl. viii, pp. 521-524.
- HENNEGUY, L. F. Recherches sur le Développement des Poissons osseux. Embryogénie de la Truite. J. de l'Anat. Phys. xxiv, pp. 413-502.
- HOFFMANN, C. K. Ueber den Ursprung und die Bedeutung der sogenannten "freien" Kerne in dem Nahrungsdotter bei den Knochenfischen. Z. wiss. Zool. xlvi, pp. 517-548, pl. xxxv.
- REINHARD, W. Entwicklung der Keimblätter, der Chorda und des Mitteldarmes bei den Cyprinoiden. Zool. Anz. xi, pp. 648-655, fig.
The observations were made on *Leuciscus erythrophthalmus*.
- GUNN, R. M. On the Embryology of the Retina of Teleosteans. Ann. N. H. (6) ii, pp. 263-268.

ACANTHOPTERYGII.

T. GILL, Am. Nat. xxii, pp. 356-358, writes on the primary groups of the Mail-cheeked Fishes, which he arranges as follows:—

Superfam. SCORPENOIDEA. Fams. *Scorpenidae*, *Synanceidae*, *Hexagrammidae* (= *Chiridae*), *Anoplopomidae*.

Superfam. COTTOIDEA. Fams. *Hemitripteriidae*, *Cottidae*.

Superfam. TRIGLOIDEA. Fams. *Triglidae*, *Peristetiidae*.

Superfam. DACTYLOPTEROIDEA. Fam. *Dactylopteridae*.

PERCIDEÆ.

Perca fluviatilis, L.: on its migrations for the purpose of spawning; KNAUTH, Zool. Gart. xxix, p. 186.

Percarina, Nordm., and *Benthophilus*, Eichw.: notes by J. D. KUSNEZOFF, Tr. Soc. Nat. St. Petersb. xix, p. 189 (Russian). *P. maeotica*, n. sp., p. 202, Sea of Azov.

Benthophilus macrocephalus, Pall., n. var. *maeotica*, p. 207, and *B. monstrosus*, n. sp., p. 208, Sea of Azov.

Etheostoma (*Imostoma*) *longimana*, n. sp., JORDAN, P. Ac. Philad. 1888, p. 179, James River, Virginia.

Serranus striolatus, Playf., is regarded as a variety of *S. altivelis*, C. & V.; DAY, P. Z. S. 1888, p. 258. *S. retouti*, Blkr., = *S. diacanthus*, C. & V., and *S. grammicus*, Day, = *S. latifasciatus*, Schleg.; *id. t. c.* p. 259. *S. praopercularis* and *gibbosus*, n. spp., BOULENGER, P. Z. S. 1887, p. 654, Muscat, Arabia. DAY, P. Z. S. 1888, p. 258, identifies the former with *S. morrhua*, C. & V., the latter with ? *S. altivelis*, C. & V.

Lutjanus blackfordi, Goode & Bean: note on a young specimen; BEAN, P. U. S. Nat. Mus. x, p. 512.

Mesoprion garretti, Gthr., = *Lutjanus argentimaculatus*, Forsk.; DAY, *t. c.* p. 260.

Gramma loreto, Poey: note by GILL, P. U. S. Nat. Mus. x, p. 615.

Dules auriga, C. & V., figured by STEINDACHNER, SB. Ak. Wien, xcvi, pl. i, fig. 2.

Moronopsis sandvicensis, Sldr., described and figured; *id. t. c.* p. 56, pl. i, fig. 1.

Diagramma jayakari, n. sp., BOULENGER, P. Z. S. 1887, p. 656, Muscat, Arabia.

Histioporus elevatus, n. sp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) iii, p. 1311, Port Jackson.

Gerres altispinis, Gthr., = *G. setifer*, Ham. Buch.; DAY, P. Z. S. 1888, p. 260.

✓ *Chthamaloptyx*, n. g., closely allied to *Gerres*, Cuv., with 17 dorsal and 17 anal soft rays, for *Gerres melbournensis*, Casteln.; DOUGLAS-OGILBY, *op. cit.* 1887, p. 616, fig.

Synagris notatus, Day, = *S. tenuipterus*, C. & V.; DAY, *t. c.* p. 260.

Apogon arafurae, Gthr., = *A. ellioti*, Day; *id. t. c.* p. 260. *A. mazimus*, n. sp., BOULENGER, P. Z. S. 1887, p. 655, Muscat, Arabia. *A. thurstoni*, n. sp., DAY, Suppl. Fish. Ind. p. 784, Madras. *A. tickelii*, n. n. for *A. poecilopterus*, Cant., *nec* C. V.; *id. t. c.* p. 785. *A. norfolcensis*, n. sp., DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 990, Norfolk I.

SQUAMIPINNES.

Chatodon obscurus, n. sp., BOULENGER, P. Z. S. 1887, p. 657, Muscat, Arabia.

MULLIDÆ.

Mulloidés zeylonicus, C. & V., distinguished from *M. flavolineatus*, Lacép.; BOULENGER, P. Z. S. 1887, p. 658.

SPARIDÆ.

Dichistius, n. n. for *Dipterodon*, Cuv., *nec* Lacép.; GILL, P. U. S. Nat. Mus. xi, p. 68.

Sargus kotschy, Sldr., = *S. capensis*, Smith; BOULENGER, P. Z. S. 1887, p. 658. *S. laticornis*, n. sp. (foss.). DAVIS, Tr. R. Dublin Soc. (2) iv, p. 43, pl. vii, figs. 3-8, Tertiary, New Zealand.

Pagrus ruber, n. sp., BOULENGER, P. Z. S. 1887, p. 658, Muscat, Arabia [= *P. spinifer*, Forsk.].

Pagellus affinis, n. sp., *id. t. c.* p. 659, Arabia and Cape of Good Hope.

SCORPENIDÆ.

Scorpena ustulata, Lowe : notes by BELLOTTI, Atti Soc. Ital. xxxi, p. 213, pl. iv a, fig. 1.

BERYCIDÆ.

Trachichthys commensal of sea-anemones; SLUITER, Zool. Anz. xi, p. 240.

✓ *Scopelogadus*, n. g., = *Melamphaes*, Gthr.; VAILLANT, Expéd. Trav. & Talism. pp. 141 & 385. *S. coctes*, n. sp., *id. t. c.* p. 143, pl. xxvi, fig. 6, Banc d'Arguin and Cape Verde, 1090-3655.

SCIENIDÆ.

Umbrina striata, n. sp., BOULENGER, P. Z. S. 1887, p. 660, Muscat, Arabia. Identified by DAY, *op. cit.* 1888, p. 260, with *U. sinuata*, Day.

TRICHIURIDÆ.

Thyrsopterus violaceus, n. sp., BEAN, P. U. S. Nat. Mus. x, p. 513, New England Coast, 125 faths.

CARANGIDÆ.

Caranx jayakari, n. sp., BOULENGER, P. Z. S. 1887, p. 661, Muscat, Arabia.

Trachynotus coppingeri, Gthr., = *T. russellii*, C. & V.; DAY, *op. cit.* 1888, p. 260.

Capros aper, Lacép.; notes on the habits, by J. T. CUNNINGHAM, J. Mar. Biol. Ass. i, p. 243.

Dirtemus argenteus, Johns., described by VAILLANT, Expéd. Trav. & Talism. p. 355.

CYTTIDÆ.

Cyttus roseus, Lowe, described by VAILLANT, Expéd. Trav. & Talism. p. 349.

NOMEIDÆ.

Psenes guamensis, Gthr., = *P. javanicus*, C. & V.; DAY, P. Z. S. 1888, p. 260.

CORYPHÆNIDÆ.

Brama raii, Bl., figured by MCCOY, Prodr. Zool. Vict. pl. cxxxiii.

SCOMBRIDÆ.

R. STORMS, Ann. N. H. (6) ii, pp. 67-76, discusses the morphological significance of the adhesive disk of *Echeneis*. He concludes that the

lamellæ of the disk were formed by the bases of the spinous rays, and that the spines proper were gradually reduced in size until disappearance; and that the disk was formed on the dorsal region, and then gradually shifted to its actual position. Remarks are made on *Echeneis glaronensis*, Wettst. (foss.), which probably represents an ancestral form of the living types.

Elacate, Cuv. T. GILL, P. U. S. Nat. Mus. x, pp. 612-614, defines the character of his family *Elacatidae*, the affinity of which to the *Echeneididae* is stated to be purely imaginary. *E. canada*, L., external characters and skull figured, pl. xxxix.

✓ *Albacora*, n. n. for *Thynnus*, Cuv., nec Fabr., and *Germo*, n. n. for *Orcynus*, Cuv., nec Raf.; JORDAN, P. Ac. Philad. 1898, p. 180, and Ann. N. H. (6) ii, p. 356.

Dictyodus, Ow. (foss.), belongs to the *Scombridae*; DOLLO & STORMS, Zool. Anz. xi, p. 265.

Scomberodon, Van. Ben., = *Cybium*, iid. t. c. p. 267.

Cybium commersonii, Lac., figured by MCCOY, Prodr. Zool. Vict. pl. cliv: on a Sicilian specimen; DODERLEIN, Nat. Sicil. vii, pp. 105 & 129.

Pelumys schlegeli, n. sp., MCCOY, op. cit. pl. clv, Port Philip Bay.

TRACHINIDÆ.

W. N. PARKER, P. Z. S. 1888, pp. 359-367, figs., pl. xvii, describes the poison-organs of *Trachinus*; also Anat. Anz. iii, pp. 468-470 & 873.

J. CHIEVITZ, Anat. Anz. iii, p. 787, observes that Schmidt, in 1874, has also mentioned and described the poison-organs of *Trachinus*.

Trachinus draco, L., and *T. vipera*, C. & V., are distinct species; DAY, Ann. N. H. (6) i, p. 351.

Percis cylindrica, n. sp., id., P. Z. S. 1888, p. 260, Andaman Is.

Cottoperca rosenbergii, Sldr., noticed and figured by VAILLANT, Miss. Cap Horn, Poiss. p. 28, pl. iv, fig. 1.

Opisthognathus muscatensis, n. sp., BOULENGER, P. Z. S. 1887, p. 662, pl. liv, fig. 1, Muscat, Arabia.

Notothenia macrocephala, Gthr., figured by VAILLANT, Miss. Cap Horn, Poiss. pl. iii, fig. 2.

ICCSIIDÆ.

✓ *Acrotus*, n. g., near *Icosteus*, Lock., but differing in the absence of ventrals and spiny tubercles along the lateral line and in having an emarginate caudal. *A. willoughbyi*, n. sp., BEAN, P. U. S. Nat. Mus. x, p. 631, Washington Territory.

BATRACHIDÆ.

✓ *Maregravia*, n. g., for *Batrachus cryptocentrus*, C. & V., *grunniens*, L., and allied species without foramen in the axil; JORDAN, P. U. S. Nat. Mus. ix, 1886, p. 546. [Omitted from Zool. Rec. xxiii.]

PEDICULATI.

Chaunax pictus, Lowe, described and figured by VAILLANT, Expéd. Trav. & Talism. p. 343, pl. xxviii, fig. 1.

COTTIDÆ.

Cottus liljeborgii, Coll., described and figured, from the North-West Coast of Scotland, by GÜNTHER, P. R. Soc. Edinb. xv, p. 207, pl. iv, fig. B.

Cottunculus torvus, Goode (= *thomsoni*, Gthr.), described and figured by VAILLANT, Expéd. Trav. & Talism. p. 360, pl. xxviii, fig. 3. *C. inermis*, n. sp., *id. t. c.* p. 365, pl. xxviii, fig. 2, Coast of Soudan and Banc d'Arguin, 930-1495 m.

Trigla arabica, n. sp., BOULENGER, P. Z. S. 1887, p. 663, Muscat, Arabia.

Triglops murrayi, n. sp., GÜNTHER, P. R. Soc. Edinb. xv, p. 209, pl. iv, fig. A, North-West Coast of Scotland.

DISCOBOLI.

✓ *Enantioliparis*, n. g., Liparidibus persimilis, nisi impares pinnae continuæ sunt et radii inferiores liberi pectoralibus haud reperiuntur. *E. pallidus*, n. sp., VAILLANT, Miss. Cap Horn, Poiss. p. 22, pl. iv, fig. 3, Orange Bay, Magellan Straits.

✓ *Gymnolycodes*, n. g. Body compressed, tapering, ensiform; skin feebly adherent to the subjacent tissues, scaleless; vertical fins confluent; pectorals enveloped in the integument; ventrals jugular?; jaws with fine teeth on several rows, arranged quincuncially; vomer and palate toothless; branchial opening small, a little above the pectorals: VAILLANT, Expéd. Trav. & Talism. pp. 312 & 387. *G. edwardsi*, n. sp., *id. t. c.* p. 313, pl. xxvi, fig. 3, Coast of Morocco, 1319 m.

GOBIIDÆ.

On the American species; C. H. & R. S. EIGENMANN, P. Cal. Ac. (2) i, pp. 51-78.

Gobius punctatissimus, Can.: notes by G. B. TOROSI, Bull. Soc. Ven.-Trent. iv, p. 105. *G. jeffreysii*, Gthr.: male figured by GÜNTHER, P. R. Soc. Edinb. xv, pl. iii, fig. B. *G. ater*, n. sp., BELLOTTI, Atti Soc. Ital. xxxi, p. 219, pl. iv a, fig. 2, Mediterranean. *G. jayakari*, n. sp., BOULENGER, P. Z. S. 1887, p. 663, pl. liv, fig. 2, Muscat, Arabia (fresh waters). *G. littoreus*, n. sp., DAY, P. Z. S. 1888, p. 261, Madras. *G. thurstoni*, n. sp., *id. Suppl. Fish. Ind.* p. 793, Madras. *G. lucretiae*, p. 57, Pearl I., Gulf of Panama, *garmani*, p. 61, West Indies, and *hemigymnus*, p. 66, West Indies, n. spp., C. H. & R. S. EIGENMANN, *t. c.*

Microgobius eulepis, n. sp., *id. t. c.* p. 69, South Carolina.

✓ *Barbulifer*, n. g. Body entirely naked; numerous barbels around the mouth and on the chin; dorsal spines 7; otherwise as in *Gobiosoma*. *B. papillosus*, n. sp., *id. t. c.* p. 70, Key West, Florida.

✓ *Clevelandia*, n. g. Body long and slender; maxillary much produced, but not extending to the gill-opening; mouth horizontal; dorsal spines 4, very weak; minute cycloid scales; for *Gobiosoma longipinne*, Stdr. : *iid. t. c.* p. 73.

Gobiomorus, Lacép., should supersede *Valenciennae*, Blkr.; GILL, P. U. S. Nat. Mus. xi, p. 69.

Sicydium halei, n. sp., DAY, Suppl. Fish. Ind. p. 794, Ceylon.

Eleotris xanthi, n. sp., GÜNTHER, Ann. N. H. (6) i, p. 430, Yangtsekiang.

E. ellioti, n. sp., DAY, P. Z. S. 1888, p. 262, Madras.

Callionymus bairdi, n. sp., JORDAN, P. U. S. Nat. Mus. x, p. 501, Gulf of Mexico. *C. calliurus*, n. sp., C. H. & R. S. EIGENMANN, *t. c.* p. 76, Key West, Florida.

CEPOLIDÆ.

Cepola indica, n. sp., DAY, Suppl. Fish. Ind. p. 796, Madras.

BLENNIIDÆ.

Petroscirtes striatus, n. sp., DAY, P. Z. S. 1888, p. 262, Ceylon.

Salarius symplocos, n. sp., HILGENDORF, SB. nat. Fr. 1888, p. 79, and Arch. f. Nat. liv, p. 209, pl. xiv, fig. A, Azores. *S. leopardus*, = *S. brevis*, Kner; DAY, P. Z. S. 1888, p. 264. *S. sindensis* and *neilli*, n. spp., *id. t. c.* p. 263, Sind.

Acanthodinus indicus, n. sp., *id. t. c.* p. 264, Madras.

Cristiceps halei, n. sp., *id.* Suppl. Fish. Ind. p. 799, fig., Ceylon.

Tripterygium annulatum, ii, p. 1021, and *striaticeps*, iii, p. 419, n. spp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2), Port Jackson.

Zoarces viviparus, Cuv. : note on the reproduction, by VAN BAMBEKE, Bull. Ac. Belg. (3) xv, p. 92.

ATHERINIDÆ.

Tetragonurus wilkinsonii, Macleay : notes by RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) iii, p. 9.

MUGILIDÆ.

Mugil klunzingeri, n. n., for *M. carinatus*, Day, nec C. & V.; DAY, P. Z. S. 1888, p. 264.

✓ *Trachystoma*, n. g. Branchiostegals six; pseudobranchiæ present; no adipose eyelids; vomer and palate furnished with distinct bands of villiform teeth; jaws toothless; scales rather small, finely ctenoid. *T. multident*, n. sp., DOUGLAS-OGILBY, P. Z. S. 1887, p. 614, New South Wales.

FISTULARIIDÆ.

Aulostoma ? longipes, n. sp., VAILLANT, Expéd. Trav. & Talism. p. 340, pl. xxvii, fig. 4, Coast of Morocco, 1163 m.

GOBIESOCIDÆ.

GUITEL, F. Recherches sur les Lepadogasters. Arch. Z. expér. (2) vi, pp. 423-480, pls. xxiv & xxv.

Anatomical notes on the French species, *Lepadogaster gouanii*, Lacép., *binaculatus*, Flem., *candollii*, Risso, and *wildenovii*, Risso.

LABYRINTHICI.

ZOGRAFF, N. On the Construction and Purpose of the so-called Labyrinthine Apparatus of the Labyrinthic Fishes. Q. J. Micr. Sci. xxviii, pp. 501-512, pl. xli.

TRACHYPTERIDÆ.

Regalecus banksi, Cuv., figured by MCCOY, Prodr. Zool. Viet. pl. cxlv.

NOTACANTHI.

VAILLANT, C.R. evii, pp. 751-753, and Expéd. Trav. & Talism. p. 322, discussing the systematic position of the Fishes of this family, expresses the opinion that they should be placed with the Ganoids.

Notacanthus mediterraneus, Phil. & Ver., p. 322, pl. xxvii, fig. 2, and *rissoanus*, Phil. & Ver., p. 335, pl. xxvii, fig. 1, described and figured, *id.* t. c. *N. challengerii*, n. n. for *N. rissoanus*, Gthr., *nec* Phil. & Ver.; *id.* t. c. p. 388.

INCERTÆ SEDIS.

Grammicolepis brachiusculus, Poey : notes on the skeleton ; SHUFELDT, J. Morph. ii, p. 271, figs.

ACANTHOPTERYGII PHARYNGOGNATHI.

POMACENTRIDÆ.

Glyphidodon (Parma) hermani, Sldr., described and figured by STEINDACHNER, SB. Ak. Wien, xcvi, p. 59, pl. iii.

LABRIDÆ.

Crenilabrus aurantiacus, Cocco, described by FACCIOLOÀ, Nat. Sicil. viii, p. 22.

PlatyGLOSSUS roseus, n. sp., DAY, P. Z. S. 1888, p. 264, Sind.

Noracula paro, C. & V., noticed from Ceylon, by HALY, Taprobanian, iii, p. 51.

Coris variegata, Rams. & Ogilby, = *aureomaculatus*, BEND.; RAMSAY & DOUGLAS OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 1024. *C. halei*, n. sp., DAY, Suppl. Fish. Ind. p. 803, Ceylon. *C. trimaculata*, n. sp., DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 992, Norfolk I.

Labrichthys bleakeri, Cant., figured by McCoy, Prodr. Zool. Vict. pl. cxxxiv.

✓ *Eupetrichthys*, n. g., between *Labrichthys* and *Labroides*. Branchiostegals six; pseudobranchiæ present; body elongate and compressed; gill-membranes attached to the isthmus; preopercle entire; jaws with a pair of curved canines anteriorly, and a lateral row of conical teeth; posterior canine present; dorsal fin with 9 spines and 12 rays; anal with 3 spines and 11 rays; ventral fins with an elongated ray; scales cycloid, large; opercle and cheek scaly; lateral line continuous. RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 631. *E. angustipes*, n. sp., *id. t. c.* p. 632, Port Jackson.

Pseudocarus madagascariensis, Sldr., p. 61, pl. ii, fig. 1, and *knerii*, Sldr., p. 64, pl. iv, fig. 1, described and figured by STEINDACHNER, SB. Ak. Wien, xvi. *P. troschelii*, Blkr., n. var. *flavoguttata*, *id. t. c.* p. 63, Kingsmill Is.

CHEOMIDES.

Chromis nuchisquamulatus and *obliquidens*, n. spp., HILGENDORF, SB. nat. Fr. 1888, p. 76, Victoria Nyanza. *Haplochromis*, n. subg., for the latter species; *id. ibid.*

Paratilapia? *retrodens*, p. 76, *cavifrons*, p. 77, and *longirostris*, p. 77, n. spp., *id. t. c.*, Victoria Nyanza.

Hemichromis voltæ, Sldr., described and figured by STEINDACHNER, SB. Ak. Wien, xvi, p. 60, pl. i, fig. 3.

ANACANTHINI.

LYCODIDÆ.

Lycodes macrops, Gthr., described and figured by VAILLANT, Expéd. Trav. & Talism. p. 306, pl. xxvi, fig. 2. *L. albus*, n. sp., *id. t. c.* p. 309, pl. xxvi, fig. 1, Atlantic, 3975 m. *L. latitans*, Jen., figured by VAILLANT, Miss. Sci. Cap Horn. Poiss. pl. iii, fig. 1.

GADIDÆ.

Gadus luscus, L., and *G. minutus*, L.: on their specific distinction; DAY, Ann. N. H. (6) i, pp. 151-154; M'INTOSH, *op. cit.* ii, pp. 348-351; DAY, *t. c.* pp. 387-389. *G. esmarkii*, Nilas.: recorded from the North-West Coast of Scotland, and figured by GÜNTHER, P. R. Soc. Edinb. xv, p. 212, pl. iii, fig. a.

Physiculus dalwigkii, Kaup, figured by VAILLANT, Expéd. Trav. & Talism. pl. xxv, fig. 3.

✓ *Brosmiculus*, n. g. Body elongate; a single dorsal and a single anal; caudal distinct; ventrals narrow, formed of 5 rays; teeth moderate, in two series in both jaws; no palatine or vomerine teeth; no barbel or pseudobranchiæ: *id. t. c.* p. 292. *B. imberbis*, n. sp., *id. t. c.* p. 293, pl. xxv, fig. 4, Cape Verde Is., 460 m.

Halargyreus brevipes, n. sp., *id. t. c.* p. 295, pl. xxv, fig. 5, Coast of Morocco, 1319 m.

Merlangus argenteus, Guich., described by VAILLANT, *t. c.* p. 302.

Raniceps bifurcus, Art.: on its presence on the coast of Boulogne: SAUVAGE, Bull. Soc. Zool. xiii, p. 229.

Muraenolepis orangiensis, n. sp., VAILLANT, Miss. Sci. Cap Horn, Poiss. p. 20, pl. iv, fig. 2, Orange Bay, Straits of Magellan.

Sympodoichthys fasciatus, n. g. & sp., for a larval form of uncertain affinities; FACCIOLA, Nat. Sicil. vii, p. 169, Messina.

OPHIDIIDÆ.

Brotula jerdoni, n. sp., DAY, Suppl. Fish. Ind. p. 804, Madras.

Dicrolene introniger, Goode & Bean, described and figured by VAILLANT, Expéd. Trav. & Talism. p. 258, pl. xxiii, fig. 2.

Porogadus nudus, p. 262, pl. xxiv, fig. 2, and *subarmatus*, p. 265, pl. xxiv, fig. 3, n. spp., *id. t. c.*, Cape Verde, 2324–3200 m.

Sirembo guentheri (= *Mixonus laticeps*, Gthr.), pp. 268 & 386, pl. xxiv, fig. 5, Cape Verde, 3200 m., *meriostoma*, p. 270, pl. xxiii, fig. 3, Banc d'Arguin and Cape Verde, 1230–1442 m., *muraenolepis* (= *Diplacanthopoma brachysoma*, Gthr.), pp. 273 & 386, pl. xxiii, fig. 4, Coast of Soudan, 410 m., *microcephalus*, p. 275, pl. xxiv, fig. 4, Cape Verde, 3200 m., and *oncerocephalus*, pp. 277 & 387, pl. xxiv, fig. 6, Cape Verde, 3200 m., n. spp., *id. t. c.*

Bythites crassus, n. sp., *id. t. c.* p. 279, pl. xxv, fig. 1, Atlantic, 4255 m.
 ✓ *Alexeterion*, n. g. Head short; mandible projecting beyond the upper jaw; mouth directed upwards; fine teeth in both jaws, none on vomers or palatines; eye rudimentary; no barbel; branchial opening widely cleft; branchiostegal membrane free; vent remote from the throat; vertical fins confluent; pectorals distinct; no ventrals. *Id. t. c.* p. 182.
A. parfaiti, n. sp., *id. t. c.* p. 283, pl. xxv, fig. 2, Atlantic, 5005 m.

Pteridium atrum, Risso: notes by BELLOTTI, Atti Soc. Ital. xxxi, p. 222.

MACRURIDÆ.

Bathygadus melanobranchus, n. sp., VAILLANT, Expéd. Trav. & Talism. p. 206, pl. xviii, fig. 1, Coasts of Morocco and Soudan and Canaries, 834–1590 m.

Hymenoccephalus italicus, Gigl., p. 211, pl. xix, fig. 1, *globiceps*, Vaill., p. 214, pl. xx, fig. 1, and *longifilis*, p. 218, pl. xxiii, fig. 1, described and figured; *id. t. c.* *H. dispar*, n. sp., *id. t. c.* p. 221, pl. xxiv, fig. 1, Coast of Morocco, 1105 m.

Coryphænoideus sublevis, pp. 225 & 386, pl. xix, fig. 2, Coasts of Morocco and Soudan and Cape Verde Is., 140–2260 m., *asperimus*, p. 229, pl. xviii, fig. 2, Coast of Morocco and Azores, 1257–1590 m., and *gigas*, p. 232, pl. xx, fig. 2, Atlantic, 4165–4255 m., n. spp., *id. t. c.*

Macrurus sclerorhynchus, Val., p. 237, pl. xxii, fig. 2, *calorhynchus*, Risso, pl. xxi, fig. 3, *trachyrhynchus*, Risso, pl. xxi, fig. 2, and *japonicus*, Schleg., pl. xxi, fig. 1, figured; *id. t. c.* *M. guentheri*, pp. 241 & 386,

pl. xxii, fig. 3, Coast of Morocco, 2115-2200 m., *smiliophorus* [= ? *aqualis*, Gthr.), p. 242, pl. xxii, fig. 1, Gulf of Gascogne, Coasts of Morocco and Soudan, and Cape Verde Is., 460-1319 m., and *zaniophorus*, p. 245, pl. xxii, fig. 4, Coasts of Morocco and Soudan, 830-1350 m., n. spp., *id. t. c.*

PLEURONECTIDÆ.

Rhombus norvegicus, Gthr.: figured, and notes upon specimens from the N.W. Coast of Scotland; GÜNTHER, P. R. Soc. Edinb. xv, p. 217, pl. iv, fig. c.

Solea vulgaris, Quena.: on the reproductive organs; J. T. CUNNINGHAM, J. Mar. Biol. Ass. i, p. 248. *S. profundicola*, n. sp., VAILLANT, Expéd. Trav. & Talism. p. 190, Coasts of Portugal and Soudan, 250-1290 m.

W. C. MCINTOSH, Ann. N. H. (6) ii, p. 469, describes a post-larval Pleuronectoid (*Rhombus*?) from Scotland.

PHYSOSTOMI.

SILURIDÆ.

C. H. & R. S. EIGENMANN, Am. Nat. xxii, pp. 647-649, remark on the modifications of the air-bladder in the American Siluroids. They find that *Diplomystes* differs from all other Cat-fishes in having a well-developed maxillary bone bearing a band of teeth and forming the sides of the jaw. The following American families are characterized:—*Bunocephalidæ*, *Siluridæ*, *Hypophthalmidæ*, *Pygidiidæ*, *Argeidæ*, *Loricariidæ*, *Callichthyidæ*.

Notes on South American Siluroids, by C. H. & R. S. EIGENMANN, P. Cal. Ac. (2) i, pp. 119-172.

Silurus glanis, L.: on a specimen with supernumerary ventral fin; WARPACHOWSKI, Anat. Anz. iii, p. 379, fig.

Pimelodina nasus, n. sp., C. H. & R. S. EIGENMANN, P. Cal. Ac. (2) i, p. 120, Para.

✓ *Luciopimelodus*, n. g., for *Pimelodus pati*, Val., and *platanus*, Gthr.; *id. t. c.* p. 122.

Pseudopimelodus acanthochirus, n. sp., *id. t. c.* p. 122, Brazil.

Rhamdia obesa, p. 124, *poeyi*, p. 127, *tenella*, p. 127, and *eriarcha*, p. 129, n. spp., *id. t. c.*, Brazil. The latter species is made the type of a new subg. *Rhamdella*, p. 129. *R. parryi*, n. sp., *id. t. c.* p. 130, Mexico.

✓ *Pimelodella*, n. g., for *Pimelodus cristatus*, Müll. & Trosch., and allies; *id. t. c.* p. 131. *P. pectinifer*, n. sp., *id. t. c.* p. 132, Brazil.

✓ *Sciadeoides*, n. subg., for *Sciades marmoratus*, Gill; *id. t. c.* p. 136.

✓ *Duopalatinus*, n. g., for *Platystoma emarginatum*, C. & V.; *id. t. c.* p. 136.

✓ *Steindachneria*, n. g., for *Platystoma parahybæ*, Stdr., and *S. amblyurus*, n. sp., *id. t. c.* p. 137, Brazil.

Pseudoplatystoma fasciatum, n. var. *intermedium*; *id. t. c.* p. 138, Brazil.

Arius thalassinus, Rüpp., and *A. nasutus*, C. & V.; note by BOULENGER,

P. Z. S. 1887, p. 665. *A. commersonii*, Lacép. : on development and paternal care; H. VON IHERING, Biol. Centralbl. viii, p. 268.

Tachysurus lentiginosus, p. 139, Panama, *jordani*, p. 142, Panama, *longicephalus*, p. 143, Panama, *agassizii*, p. 145, Rio Grande do Sul, and *gulosus*, p. 146, Panama, n. spp., C. H. & R. S. EIGENMANN, t. c.

Ageneiosus atronasus, n. sp., *iid.* t. c. p. 149, loc. ?.

Auchenipterus fordicei, n. sp., *iid.* t. c. p. 151, Brazil.

Felichthys flavesceus, n. sp., *iid.* t. c. p. 152, Rio San Francisco.

Trachycoristes porosus, p. 154, and *anulis*, p. 156, n. spp., *iid.* t. c., Brazil.

✓ *Hassar*, n. subg., for *Doras orestes*, Stdr., and *affinis*, Stdr., *iid.* t. c. p. 158.

Doras uranoscopus, p. 159, and *spinosissimus*, p. 161, n. spp., *iid.* t. c., Brazil.

Synodontia afro-fischeri, n. sp., HILGENDORF, SB. nat. Fr. 1888, p. 77, Victoria Nyanza.

✓ *Decapogon*, n. g., for *Callichthys adpersus*, Stdr.; C. H. & R. S. EIGENMANN, t. c. p. 165.

Corydoras hastatus, n. sp., *iid.* t. c. p. 166, Brazil.

Plecotomus limosus, p. 167, Rio Grande do Sul, *scabriceps*, p. 168, Sao Matheos, *seminudus*, p. 169, Brazil?, *macrops*, p. 170, Rio das Velhas, and *vermicularis*, p. 171, Brazil, n. spp., *iid.* t. c.

✓ *Neoplecotomus*, n. subg., for *Plecotomus microps*, Stdr.; *iid.* t. c. p. 171.

Bucklandium dilucii, König (foss.). This is a Siluroid, and the earliest undoubted member of the family hitherto discovered; A. S. WOODWARD, Ann. N. H. (6) ii, p. 355, and Geol. Mag. (3) v, p. 471.

SCOPULIDÆ.

Bathysaurus ferox, Gthr., described and figured by VAILLANT, Expéd. Trav. & Talism. p. 139, pl. x, fig. 1 (see p. 385). *B. obtusirostris*, n. sp., *id.* t. c. p. 136, pls. x, fig. 2, & xiv, fig. 3, Cape Verde, 3655 m.

Bathypterois dubius, n. sp., *id.* t. c. p. 124, pls. ix, fig. 1, xii, fig. 4, xiv, fig. 4, xv, fig. 4, Coasts of Morocco and Soudan to Canaries and Azores, 834-1635 m.

Scopelus elongatus, Costa : notes by BELLOTTI, Atti Soc. Ital. xxxi, p. 225. *S. veranyi*, n. sp., MOREAU, Bull. Soc. Philom. (7) xii, p. 108, Nice.

Aulopus agassizii, Bp., figured by VAILLANT, t. c. pl. xii, fig. 3.

Neoscopelus macrolepidotus, Johns., figured by VAILLANT, Expéd. Trav. & Talism. pl. ix, fig. 2.

CYPRINIDÆ.

Scaphiodon muscatensis, n. sp., BOULENGER, P. Z. S. 1887, p. 665, Muscat, Arabia.

Diptychus kessleri, n. sp., RUSSKI, Zool. Jahrb., iii, p. 796, pl. xxix, Tschirtechik R., trib. of the Syr-Daria, Central Asia.

Gobio fluviatilis, Cuv. : notes on Silesian specimens ; KNAUTHE, Zool. xxix, pp 147 & 248.

Pseudogobio productus, Ptrs., redescribed by GÜNTHER, Ann. N. H. (6) i, p. 431. *P. maculatus*, n. sp., *id. t. c.* p. 432, Yangtsekiang.

Rhinogobio cylindricus, n. sp., *id. t. c.* p. 432, Yangtsekiang.

Crossochilus monticola, n. sp., *id. t. c.* p. 431, Yangtsekiang.

Leuciscus agassizii, U. & V., found in Western Silesia ; KNAUTHE, Zool. Gart. xxix, p. 220.

Phoxinus strauchi, pp. 534 & 687. R. Irtysh, *sabanzjewi*, pp. 535 & 687, E. Slope of the Ural, *altus*, pp. 535 & 688, Yenissei, *subkiesii*, pp. 535 & 688, Lena, *variabilis*, pp. 536 & 689, Obi, and *kuldyschiensis*, pp. 536 & 689, Balkash Basin, n. spp., WARPACHOWSKI, Bull. Pétersb. xxxii [1887], and Mém. Biol. xii.

Rhodeus amarus, Bl. : notes on the reproduction in captivity ; RICHTERS, Zool. Gart. xxix, p. 42.

Leucaspis delineatus, Heck., found in Western Silesia ; KNAUTHE, *t. c.* pp. 73 & 188.

Hemiculter, Blkr., and *Hemiculterella*, Warp. ; WARPACHOWSKI's paper noticed in the preceding Record [p. 27], is republished in Mém. Biol. xii, pp. 691-708.

Rohitee cunma, n. sp., DAY, Suppl. Fish. Ind. p. 807, Moulmein.

✓ *Acanthotus*, n. g. (name preoccupied). Mouth arched ; barbels absent, eyes without adipose lids ; dorsal fin rather short, commencing slightly anterior to the root of the ventral, its osseous ray being strong, serrated, and preceded at its base by a small forwardly-directed spine ; anal short ; scales large, no enlarged row at base of anal fin ; lateral line complete and continued to opposite the centre of the base of the caudal. *A. argenteus*, n. sp., *id. t. c.* p. 807, Tenasserim.

Hemuloptera fimbriata, n. sp., GÜNTHER, Ann. N. H. (6) i, p. 433, Yangtsekiang.

Misgurnus mizolepis, n. sp., *id. t. c.* p. 434, Yangtsekiang.

Nemachilus, v. Hass. The following species are described and figured by HERZENSTEIN, Wiss. Result. der Przewalski Reisen :—*N. stoliczkae*, Stdr., *dorsonotatus*, Kessl., *robustus*, Kessl., *kungessanus*, Kessl., *strauchii*, Kessl., *dalaicus*, Kessl., *intermedius*, Kessl., *yarkandensis*, Day, *labiatus*, Kessl., *nasalis*, Kessl., and *microphthalmus*, Kessl. New varr. : *N. stoliczkae leptosoma*, *productus*, *crassicauda*, and *brevicauda*, p. 23, *N. dorsonotatus plagiognathus*, p. 33, *N. robustus brachypterus*, p. 40, *N. kungessanus orientalis* and *elongatus*, p. 44, *N. strauchii transiens*, p. 50, *N. bombifrons incipiens*, p. 73, *N. yarkandensis longibarbus*, *brevibarbus*, p. 78, and *macropterus*, p. 79, *N. labiatus conjungens* p. 84. New species : *N. alticeps*, p. 28, pl. vi, fig. 3, *chondrostoma*, p. 36, pl. iii, fig. 7, *scleropterus*, p. 54, pl. vi, fig. 1, *siluroides*, p. 62, pls. vii, fig. 1, & viii, fig. 10, *stenurus*, p. 64, pl. i, fig. 1, and *bombifrons*, p. 67, pls. ii, fig. 2, & iv, fig. 2. All from Central Asia. *N. xanthi*, n. sp., GÜNTHER, Ann. N. H. (6) i, p. 433, Yangtsekiang.

✓ *Lefua*, n. n. for *Otonema*, Horz., nec Mart. ; HERZENSTEIN, Przewalski Reise, Fische, p. 3.

CHARACINIDÆ.

Elopomorphus orinocensis, Stdr., described and figured by STEINDACHNER, SB. Ak. Wien, xvi, p. 66, pl. ii, fig. 2.

HETEROPYGIL.

Typhlichthys subterraneus, Gir.: notes and figure by GIRARD, Le Nat. x, p. 107.

SCOMBRESOCIDÆ.

Hemirhamphus intermedius, Cant., figured by MCCOY, Prodr. Zool. Vict. pl. cxxxv, fig. 1.

Scombrox saurus, BL., *id. t. c.* fig. 2.

ESOCIDÆ.

Esox lucius, L.: on its migrations for the purpose of spawning; KNAUTHE, Zool. Gart. xxix, p. 186.

GALAXIIDÆ.

Galazias indicus, n. sp., DAY, Suppl. Fish. Ind. p. 808, fig., Bengal and Madras.

MORMYRIDÆ.

Mormyrus longibarbis, n. sp., HILGENDORF, SB. nat. Fr. 1888, p. 78, Victoria Nyanza.

STENOPTYCHIDÆ.

✓ *Neostoma*, n. g., allied to *Gonostoma*, Raf., but distinguished by the absence of scales; VAILLANT, Expéd. Trav. & Talism. p. 96. *N. bathyphilum*, p. 96, pl. viii, fig. 1, and *quadrioculatum*, p. 99, pl. viii, fig. 2, n. spp., *id. ibid.*, Atlantic, between Portugal and Cape Verde and the Azores, 950–4415 m. This genus should also include *Gonostoma elongatum*, Gthr., and *G. gracile*, Gthr.; *id. t. c.* p. 385.

Ichthyococcus ovatus, Cocco, figured by *id. t. c.* pl. xiv, fig. 2.

✓ *Opisthoproctus*, n. g., allied to *Ichthyococcus*; *id. t. c.* p. 105. *O. soleatus*, n. sp., p. 106, pl. xiii, fig. 1, Coast of Morocco, 2030 m.

Maurolicus pennantii, C. & V.: on the so-called luminous organs; E. PRINCE, Rep. Brit. Ass. 1887, p. 769. *M. parvipinnis*, n. sp., VAILLANT, Miss. Sci. Cap Horn, Poiss. p. 17, pl. ii, fig. 3, Magellan Straits.

✓ *Stenoptychides*, n. g. Pseudobranchiæ present; head and trunk much elevated and compressed, the latter passing gradually into the moderately long pedicle; the margin of the upper jaw formed by the intermaxillary and maxillary, each of which bears a row of long recurved teeth at a considerable distance from one another; mandible with a similar row, one of which on either side is much more developed; two series of phos-

phorescent spots along the lower side of the head, body, and tail. *S. amabilis*, n. sp., DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) iii, p. 1313, Lord Howe I.

STOMIATIDÆ.

Malacosteus choristodactylus, n. sp., VAILLANT, Expéd. Trav. & Talism. p. 108, pl. viii, fig. 4, Coast of Morocco & Azores, 1400-2200 m.

∫ *Eustomias*, n. g., allied to *Bathyophis*, Gthr., and *Echiostoma*, Lowe, but differing in the absence of teeth on the palate; *id. t. c.* p. 112. *E. obscurus*, n. sp., p. 113, pl. viii, fig. 3, Azores, 2792 m.

SALMONIDÆ.

BEAN, T. H. Distribution and some Characters of the *Salmonidæ*. Am. Nat. xxii, pp. 306-314, figs.

V. FATIO remarks on the North American Salmonoids introduced in Switzerland. Arch. Sci. Nat. (3) xix, pp. 369-375.

Notes on two hybrid Salmonoids from Howietoun; F. DAY, P. Z. S. 1888, p. 3.

Salmo salar, L.: on its presence in the sea in Norway; VAILLANT, Rev. Sci. Nat. Appl. xxxvi, p. 111: on its recent appearance in the River Candre (Boulonnais); GIARD, Bull. Sci. France, i, p. 392. *S. trutta*, L., and *S. fario*, L.: on their distribution in Livonia; A. BRUTTAN, SB. Gea. Dorp. viii, pp. 237-242. *S. namaycush*, Walb.: on its occurrence in British Columbia; JORDAN, P. U. S. Nat. Mus. xi, p. 58. *S. irideus*, Gibb: notes by A. D'AUDEVILLE, Bull. Soc. Acclim. (4) v, p. 1057, fig., & p. 1094.

Salvelinus aureolus, n. sp., BEAN, P. U. S. Nat. Mus. x, p. 628, Sunape Lake, New Hampshire.

Coregonus bezolu, n. sp., FATIO, C.R. cvi, p. 1541, and Arch. Sci. Nat. (3) xix, p. 180, Lake Bourget, Savoy.

Microstoma oblitum, Facciola: notes by BELLOTTI, Atti Soc. Ital. xxxi, p. 224, pl. iv a, fig. 3.

CLUPEIDÆ.

*WENCKEBACH, K. F. De embryonale ontwikkeling van de ansjoviach (*Engraulis encrasicolus*). Amsterdam: 1887, 4to, 11 pp., 1 pl.

Clupea harengus, L.: notes on the migrations; SAUVAGE, Bull. Soc. Acclim. (4) v, pp. 509-518. *C. pilchardus*, Walb.: notes on the spawn, by J. T. CUNNINGHAM, J. Mar. Biol. Ass. i, p. 247. *C. supidiissima*, Wils.: further notes on the osteology; FANNY HITCHCOCK, Ann. N. York Ac. iv, p. 114. *C. arcuata*, Jen., figured by VAILLANT, Miss. Sci. Cap Horn, Poiss. pl. ii, fig. 2.

Stratodus anglicus, n. sp. (foss.), A. S. WOODWARD, P. Geol. Ass. x, p. 314, pl. i, figs. 3 & 4, Chalk of Glynde, Sussex.

Osmeroides insignis, n. sp. (foss.), E. DELVAUX & J. ORTLIEB, Ann. Soc. Géol. Nord. xv, p. 60, pls. i & ii, Tertiary (Argile Ypresienne), near Ath, Belgium.

ALEPOCEPHALIDÆ.

Alepocephalus rostratus, Risso, described and figured by VAILLANT, Expéd. Trav. & Talism. p. 148, pls. xi, fig. i, & xii, fig. 5. *A. macropterus*, n. sp., *id. t. c.* p. 150, pl. xi, fig. 2, Coasts of Morocco & Soudan and Canaries, 865-2075 m.

Bathytroctes homopterus (= *rostratus*, Gthr.), pp. 153 & 386, pl. xii, fig. 1, *melanocephalus*, p. 155, pl. xi, fig. 3, and *attritus*, p. 158, pl. xii, fig. 2, n. spp., *id. t. c.*, Coasts of Morocco and Soudan to Azores, 1113-2600 m.

✓ *Anomalopterus*, n. g., perhaps allied to *Xenodermichthys* and *Leptodema*, but distinguished by an antero-dorsal adipose fold; *id. t. c.* pp. 160 & 386. *A. pinguis*, n. sp., p. 160, pl. xi, fig. 4, Coast of Morocco, 1400 m.

Xenodermichthys socialis, n. sp., *id. t. c.* p. 162, pl. xiii, fig. 1, Coasts of Morocco and Soudan, 717-1350 m.

✓ *Leptoderma*, n. g., allied to *Xenodermichthys*, but with a much smaller mouth and unequally long dorsal and anal fins; *id. t. c.* p. 165. *L. macrops*, p. 166, pl. xiii, fig. 2, Coasts of Morocco and Soudan, 1163-2330 m.

HALOSAURIDÆ.

Halosaurus macrochir, p. 171, pl. xvi, fig. 2, and *owenii*, Johns., p. 175, pl. xv, fig. 1, described and figured by VAILLANT, Expéd. Trav. & Talism. *H. johnsonianus*, p. 181, pl. xv, fig. 2, and *phalacrus*, p. 185, pls. xv, fig. 3, & xvi, fig. 1, n. spp., *id. t. c.*, Coasts of Morocco and Soudan to Canaries and Azores, 834-2220 m.

MURÆNIDÆ.

MÖBIUS, K. Bericht über Untersuchungen des Zustandes der Geschlechtsdrüsen weiblicher und männlicher Aale. Fünfter Bericht der Komm. zur wiss. Untersuchung der deutschen Meere in Kiel [1887], pp. 129-134.

Anguilla kieneri, Kaup : notes by BELLOTTI, Atti Soc. Ital. xxxi, p. 226, pl. iv a, fig. 4.

Conger vulgaris, Cuv. : notes on the breeding, by J. T. CUNNINGHAM, J. Mar. Biol. Ass. i, p. 245.

Congromuræna longicauda, n. sp., RAMSAY & DOUGLAS-OGILBY, P. Linn. Soc. N.S.W. (2) ii, p. 1022, Port Jackson.

Nemichthys scolopacea, Rich., figured by VAILLANT, Expéd. Trav. & Talism. pl. vii, fig. 2. *N. richardi*, n. sp., *id. t. c.* pp. 93 & 385, pl. vii, fig. 1, Azores, 2995 m.

Cyena atrum, Gthr., described and figured by VAILLANT, *t. c.* p. 91, pl. vii, fig. 4.

Eurypharynx, Vaill. The affinities of this fish are discussed by VAILLANT, *t. c.* p. 193, who provisionally maintains it under the *Anacanthini*. *E. pelecanooides*, Vaill., described and figured; *id. t. c.* p. 189, pl. xvii, fig. 1.

Synphobranchus pinnatus, Gray, described and figured by VAILLANT, t. c. p. 88, pl. vi, fig. 2.

Myrus pachyrhynchus, n. sp., id. t. c. p. 81, pl. v, fig. 1, Coast of Morocco and Cape Verde Is., 460–1435 m.

Uroconger vicinus, n. sp., id. t. c. p. 86, pl. vi, fig. 1, Coast of Soudan and Cape Verde Is., 633–1495 m.

Nettastoma melanurum, Raf., figured by VAILLANT, t. c. pl. v, fig. 2. *N. proboscideum*, n. sp., id. t. c. p. 84, pl. vii, fig. 3, Coast of Morocco, 2200 m.

Ophichthys imberbis, Delar. : notes by BELLOTTI, Atti Soc. Ital. xxxi, p. 227.

LOPHOBRANCHII.

ROLLETT, A. Ueber die Flossenmuskeln des Seepferdchens (*Hippocampus antiquorum*) und über Muskelstructur im Allgemeinen. Arch. mikr. Anat. xxxii, pp. 233–266, pls. vii & viii.

SMITH, W. A. On the Development of *Syngnathus acus*. P. N. H. Soc. Glasg. (2) i, pp. 105–109, pl. i.

PLECTOGNATHI.

WIEDERSHEIM, R. On the Degeneration of the Olfactory Organ of certain Fishes Rep. Brit. Ass. 1887, pp. 736–738.

Translation of the paper noticed in the preceding Record (p. 32).

THOMPSON, D'ARCY W. On the Auditory Labyrinth of *Orthogoriscus mola*, L. Anat. Anz. iii, pp. 93–96, figs.

T. GILL, Am. Nat. xxii, pp. 828–830, has critical remarks on the fossil Scleroderms, and gives diagnoses of the 3 families into which he divides this group, viz. : *Probalistidae*, *Triacanthidae*, and *Balistidae*.

Balistes macrolepis, n. sp., BOULENGER, P. Z. S. 1887, p. 666, Muscat, Arabia.

Protobalistum imperiale, Mass. (foss.), described and figured by ZIGNO. Mem. Soc. Ital. (3) vi, No. 4, pls.° *P. omboni*, n. sp. id. t. c., Monte Bolca. Remarks on these fossil Fish, by GILL, Am. Nat. xxii, p. 446.

✓ *Protacanthodes*, n. g., for *Protobalistum omboni*, Zigno; id. t. c. p. 448.

Monacanthus peronii, Holl., figured by MCCOY, Prodr. Zool. Vict. pl. cxliii.

Triodon bursarius, L. : notes by E. ANDRÉ, Le Nat. x, p. 264, figs.

CYCLOSTOMATA.

DOHRN, A. Studien zur Urgeschichte des Wirbelthierkörpers. XIII. Ueber Nerven und Gefässe bei *Ammocetes* und *Petromyzon planeri*. MT. z. Stat. Neap. viii, pp. 233–306, pls. x–xv.

JULIN, C. Sur l'appareil vasculaire et le système nerveux périphérique de l'*Ammocetes*. Réponse à M. le Dr. Dohrn. Zool. Anz. xi, pp. 567 & 568.

WHITWELL, J. R. The Ephiphysis Cerebri in *Petromyzon fluviatilis*. J. Anat. Phys. xxii, pp. 502-504, pl. xviii.

POGOJEFF, L. Ueber die feinere Structur des Geruchsorganes des Neunauges. Arch. mikr. Anat. xxxi, pp. 1-14, pl. i.

BEARD, J. The Teeth of Myxinoid Fishes. Anat. Anz. iii, pp. 169-172.

Discovery of vestiges of true teeth within the horny cones, or so-called teeth, of *Myxine* and *Bdellostoma*.

GOETTE, A. Ueber die Entwicklung von *Petromyzon fluviatilis*. Vorläufige Mittheilung. Zool. Anz. xi, pp. 160-163.

BÖHM, A. A. Ueber Reifung und Befruchtung des Eies von *Petromyzon planeri*. Arch. mikr. Anat. xxxii, pp. 613-670, pls. xxiv & xxv.

NANSEN, F. A Protandric Hermaphrodite (*Myxine glutinosa*, L.) amongst the Vertebrates. Aarsber. Berg. Mus. f. 1887, No. vii, 29 pp.

Myxine glutinosa is a protandic hermaphrodite; up to a body-length of 32-33 centim. it is a male, after that time it produces ova. There is no special breeding season for this Fish.

LEPTOCARDII.

ROHDE, E. Histologische Untersuchungen über das Nervensystem von *Amphioxus lanceolatus*. Zool. Beitr. ii, pp. 169-211, pls. xv & xvi; abstract in Zool. Anz. xi, pp. 190-196.

HATSCHKE, B. Ueber den Schichtenbau von *Amphioxus*. Anat. Anz. iii, pp. 662-667, figs.

INCERTÆ SEDIS.

NEWBERRY, J. S. On the Structure and Relations of *Edestus*, with a Description of a gigantic New Species. Ann. N. York Ac. iv, pp. 113-122.

Discussion of the views hitherto held on the nature of these fossils, which are provisionally regarded as the post-dorsal spines of large cartilaginous Fishes.

Edestus giganteus, n. sp., p. 121, pl. vi, fig. 1, Coal Measures, Mason County, Illinois.

TUNICATA.

BY

PROFESSOR W. A. HERDMAN, D.Sc., F.L.S.

LIST OF PUBLICATIONS.

1. CHUN, C. Die pelagische Thierwelt in grösseren Meerstiefen und ihre Beziehungen zu der Oberflächenfauna. Naturforscher, xxi, Jahrg. No. 19, pp. 153-155. [N. g. *Stegosoma* (Append.).]
2. GIARD, A. Sur les Nephromyces, genre nouveau de Champignons parasites du rein des Molgulidées. C.R. cvi, pp. 1180-1182.
3. HERDMAN, W. A. Note on the Specific Nomenclature of *Salpa*. P. Biol. Soc. Liverp. ii, pp. 133-136.
4. —. Report upon the *Tunicata* Collected during the Voyage of H.M.S. 'Challenger,' during the years 1873-76. Part III, 166 pp., 11 pls. Rep. Sci. Res. Chall. Exped., Zool. v, xxvii, pt. lxxvi.
5. JOLIET, L. Études anat. et embryogén. sur le *Pyrosoma giganteum*, suivies de recherches sur la faune de Bryozoaires de Roscoff et de Menton. Paris: 1888, 112 pp., 5 pls.
6. LAHILLE, F. Notes anatomiques et taxonomiques sur le genre *Pyrosoma*. Bull. Soc. Toulouse, April 4th, 1888, 3 pp.
7. —. Contributions à l'étude anatomique des Salpes. *Op. cit.* March 7th, 1888, 2 pp.
8. —. Les Tuniciers sont-ils les ancêtres des Vertébrés? *Op. cit.* xxii, pp. xcii-xcvi.
9. MAURICE, C. Étude monographique d'une espèce d'Ascidie composée (*Fragaroides aurantiacum*, n. sp.). Arch. Biol. viii, 2, pp. 205-495, pls. xvii-xix.
10. PARONA, C. Protisti parassiti nella *Ciona intestinalis*, L., de Porto di Genova. CB. Bakt. Parasit. i Jahr., i Bd., No. 5, pp. 155.
11. TODARO, F. Sull' omologia della branchia delle Salpe con quella degli altri Tunicati. Nota I. Atti R. Acc. Lincei, iv, pp. 437-444.

ANATOMY.

MAURICE (9) has given a most complete detailed account of the anatomy and histology of *Fragaroides aurantiacum*, a new Compound Ascidian closely allied to *Fragarium elegans*, Giard, which he found at Villefranche. The colony owes its orange colour in part to the presence in great abundance of small parasitic *Algae* (*Protococcus*), which are found in the test. As in many other Compound Ascidians, there is no colonial vascular system. The test cells act as phagocytes in removing the bodies of dead ascidiozooids. In the tailed larva the yoke is absorbed in the same way by the mesoblast cells (future blood corpuscles). The ascidiozooids adhere to the test, not only at the branchial and atrial apertures, but also along the lines of the longitudinal muscle bands, of which there are ten on each side. The atrial apertures open into ramified common cloacal cavities, and the atrial languets serve to keep these canals open. The branchial aperture has eight lobes. There are fourteen tentacles, of different sizes. Maurice considers the dorsal tubercle to be merely the orifice of the subneural gland. The branchial sac has thirteen to sixteen rows of stigmata on each side, with about thirty in each row. There are wide horizontal membranes and the usual dorsal languets. The transverse vessels of the branchial sac are fused with the body wall, so as to divide the peribranchial cavity into a number of independent passages at the sides of the body, all communicating dorsally with the atrial cavity. There are muscles in the transverse vessels, as is the case in many other Compound as well as Simple Ascidians. An incubatory pouch is developed, as in *Colella* and other forms, and the ova are introduced at its posterior end, so that the most advanced embryos are found anteriorly. The walls of the stomach are deeply channelled longitudinally. In connection with the nerve ganglion is found the posterior or visceral prolongation which is now being discovered in many species of Ascidians. Maurice is inclined to agree with Julin and others that the subneural gland is the homologue of the hypophysis cerebri, but he denies that it is either renal or mucous in function. The muscles are of a mesenchymatous nature, although Julin and E. van Beneden have shown that the *Tunicata* are enterocœlic. The post-abdomen contains the usual pericardiac and epicardiac tubes. In regard to the relations of these organs and the relations of the reproductive systems, Maurice supports Julin and Van Beneden's results. Most of the details in regard to the other parts of the body are similar to those already well-known in many other Compound Ascidians.

JOLIET (5) has left some unfinished studies in the anatomy of *Pyrosoma giganteum*.

HERDMAN (4, Appendix B) gives a description of the histology of the dorsal tubercle of a large unknown species of *Ascidia* from Kerguelen Island. It consists of a large number of tubular glands, opening by means of ciliated infundibula. It appears to represent the conjoined neural gland and dorsal tubercle of other Ascidians in a very simple condition, and supports the view that these organs are derived from a mucous gland.

A general account of the anatomy of *Pyrosoma*, *Doliolum*, *Salpa*, *Octacnemus*, and *Appendicularia* are given in the 'Challenger' Report, while detailed descriptions of some special points are found under the new species.

TODARO (11) compares the two large branchial clefts of *Salpa* with the two stigmata of *Appendicularia*, and with the two primary stigmata of *Ascidia*.

PHYSIOLOGY.

GIARD (2) has found symbiotic fungi belonging to the *Chytridineæ*, and for which he has formed the new genus *Nephromyces*, living in the closed renal sac of some *Molgulidæ*, at Wimereux. He finds distinct species of fungi in the Ascidians *Molgula socialis*, Ald., *Lithonephrya eugyrandæ*, Lac.-Duth., and *Anurella roscovitana*, Lac.-Duth.; and he considers that these parasites are useful to their hosts by using up the excreted urinary products which otherwise might fill up the renal organ, which has no duct to the exterior.

PARONA (10) treats of the *Protists* parasitic in *Ciona intestinalis* found at Genoa.

DEVELOPMENT.

The late M. L. JOLIET left an unfinished account of the structure and budding of *Pyrosoma giganteum*, which has now been published. He found that the subneural gland and its duct are derived, not from an invagination of the buccal cavity, but from the primitive neural vesicle. He believed the dorsal tubercle to be an olfactory organ. He discussed also, in another incomplete paper, the alternation of generations in *Salpa* and *Pyrosoma*, and defended Chamisso's views against the objections raised by Brooks.

GEOGRAPHICAL DISTRIBUTION.

The third and concluding part of the Report upon the 'Challenger' *Tunicata* contains an account of the geographical and bathymetrical distribution of the *Thaliacea*, the *Larvacea*, and the *Ascidia Salpiformes* collected during the expedition. These lists show that the pelagic *Tunicata* are very widely distributed; in fact, some species are seen to have a world-wide distribution, and no genus is restricted in its range to a particular ocean. The only undoubtedly deep-sea form is *Octacnemus*, which was probably fixed to the bottom. It was found at depths of 1070 and 2160 faths.

PHYLOGENY.

LAHILLE (8) considers that the *Tunicata* are not the ancestors of the *Vertebrata*, but form a very distinct group.

HERDMAN (4), at the conclusion of the 'Challenger' Report, gives a detailed account of the probable phylogeny of the genera of the *Tunicata*. The group is regarded as a degenerate offshoot from the *Protochordata*,

and the two most important conclusions arrived at in regard to its further history are: (1) *Pyrosoma*, although now a pelagic free-swimming organism, was derived from the fixed Compound Ascidiæ, to which it is related through *Ceolocormus huxleyi*; (2) the *Ascidia Compositæ* are a polyphyletic group, being derived from the ancestral Simple Ascidiæ at three distinct points, and consequently the Compound Ascidiæ form three groups: (1) the *Polystyelidæ*, (2) the *Botryllidæ*, and (3) the remaining families, which are more nearly related to particular sets of Simple Ascidiæ than they are to one another.

SYSTEMATIC.

LARVACEA.

HERDMAN (4) gives a definition and a general account of the structure and history of the *Appendiculariida*, with diagnoses of the four genera—*Appendicularia*, *Oikopleura*, *Fritillaria*, and *Kowalevskia*—and a record of the localities at which Appendicularians were found during the 'Challenger' expedition. No new species are described.

Stegosoma, n. g., CHUN (2).

THALIACEA.

A definition and a general account of the history, structure, and development of this order, and of the two suborders *Cyclomyaria* and *Hemimymaria*, are given in the 'Challenger' Report.

CYCLOMYARIA.

Fam. DOLIOLIDÆ.

Doliolum tritonis, HERDMAN [formerly described as *D. denticulatum*, in Tr. R. Soc. Edinb. (5) xxxii, p. 93], (4) p. 47.

Doliolum affine, n. sp., *id. ibid.*

Doliolum challengerii, n. sp., *id. t. c.* p. 48.

Doliolum krohni, n. sp., *id. t. c.* p. 49.

HEMIMYARIA.

Fam. SALPIDÆ.

The specific nomenclature of *Salpa* is discussed [HERDMAN (3)], and it is suggested that the names of both the solitary and the aggregated forms be given—e. g., *Salpa runcinata-fusiformis*, Chamisso-Cuvier.

Salpa sp. (?), n. sp., HERDMAN, (4) p. 62.

Salpa musculosa, n. sp., *id. t. c.* p. 64.

Salpa echinata, n. sp., *id. t. c.* p. 66.

Salpa mollis, n. sp., *id. t. c.* p. 68.

Salpa nitida, n. sp., *id. t. c.* p. 81.

Salpa quadrata, n. sp., *id. t. c.* p. 84.

Fam. OCTACNEMIDÆ, n. fam.

This new family is formed by HERDMAN, (4) p. 87, for the reception of *Octacnemus bythius*, Moseley. A second specimen of this remarkable form is described and figured ; HERDMAN, (4) p. 93.

ASCIDIACEA.

Definition and subdivisions ; HERDMAN, (4) p. 11.

ASCIDIÆ SALPIFORMES.

A definition and a general account of the history and structure of the group is given in the 'Challenger' Report.

Fam. PYROSOMATIDÆ.

Pyrosoma spinosum, n. sp., HERDMAN, (4) p. 29.

Several undetermined and young specimens of *Pyrosoma* are also described, p. 31.

ASCIDIÆ COMPOSITÆ.

Fam. POLYCLINIDÆ.

Fragaroides, n. subgen., MAURICE, (9) p. 225.

Fragaroides aurantiacum, n. sp., *id. t. c.* p. 225.

ASCIDIÆ SIMPLICES.

Fam. ASCIDIIDÆ.

Abyssascidia vasculosa, n. sp., HERDMAN, (4) p. 151.

Ascidia sp. (?), n. sp., *id. t. c.* p. 155.

Fam. CYNTHIIDÆ.

Styela sericata, n. sp., HERDMAN, (4) p. 153.



MOLLUSCA.

BY

W. E. HOYLE, M.A., F.R.S.E.

-
- ADAMI, G. B. *Novità malacologiche recenti.* Bull. Soc. mal. Ital. xi, 1886, pp. 209-261, 4 pls. [For pp. 205-208, *vide* Zool. Rec. xxii, *Moll.* p. 1.]
- AGASSIZ, A. *Three Cruises of the Blake.* Bull. Mus. C. Z. xiv, xv, pp. xxii, 314, & 220, 545 figs., and maps; also separately, with title—*A Contribution to American Thalassography. Three Cruises of the United States Coast and Geodetic Survey Steamer "Blake," in the Gulf of Mexico, in the Caribbean Sea, and along the Atlantic Coast of the United States, from 1877 to 1880.* Boston, New York, & London: 1888, 8vo.
- AMANS, P. C. *Comparaisons de la locomotion aquatique.* Ann. Sci. nat. (7) vi, pp. 1-164, pls. i-vi. [*Mollusca*, pp. 130-132.]
- ANCEY, C. F. (1) *Étude monographique sur le genre Pyrgulopsis.* Bull. Soc. mal. Fr. v, pp. 185-202.
- (2) *Nouvelles contributions malacologiques.*—VII. Note sur l'état jeune de certains *Ennea*. VIII. Mollusques nouveaux de l'extrême Orient. IX. Catalogue raisonné des Mollusques Néo-Calédoniens publiés jusqu'à ce jour, et compris par les auteurs dans les genres *Hyalinia*, *Helix*, *Diplomphalus*, etc. *T. c.* pp. 341-376.
- (3) *Description of New Genera or Subgenera of Helicidæ.* Conch. Exch. i, pp. 53, 54, & 64; *op. cit.* ii, pp. 22, 23, 38, & 39.
- (4) [Rectifications of Nomenclature.] *Op. cit.* i, p. 54.
- (5) *A Catalogue of the Bulimini found in Central Asia.* *Op. cit.* ii, pp. 5 & 6. [*Cf.* Zool. Rec. xxiii, *Moll.* p. 1, ANCEY (7).]
-

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

† Indicates that though the Recorder has not seen the paper, an abstract has been obtained from some other source, which is usually indicated.

[ANCEY, C. F.] (6) On the generic name of a remarkable Bivalve Shell found in the Congo. *T. c.* p. 22.

— (7) Description of North American Shells. *T. c.* pp. 63, 64, 79, & 80.

— (8) Mollusques du Haut-Tonkin (Récoltes de M. Villedouy). *Le Nat.* x, pp. 70-72, 83, 84, 92, & 93, 9 cuts.

— (9) Note sur les Bulimes français. *T. c.* pp. 120 & 121.

— (10) Descriptions de mollusques terrestres. *T. c.* pp. 188-190, 7 cuts, pp. 200 & 201, 2 cuts, pp. 215 & 216, 2 cuts.

— (11) "Remarques sur ces espèces": in, VIGNON (*vide* p. 29, *postea*).

ASHFORD, C. (1) Another Yorkshire Locality for *Vertigo angustior*. *Naturalist*, 1888, p. 89.

— (2) The Land and Fresh-water *Mollusca* round Christchurch. P. P. Hampsh. Field Club, i, pp. 40 & 41. [*Cf. Zool. Rec.* xxiv, *Moll.* p. 1.]

BALASHEVA, M. O vliyaniï vnyerhneï credni i preïmuschestvenno ob'ema vodnagho basseïna na nyekotoruikh iz chiznyakoo; and title only in French,—De l'influence du milieu extérieur et principalement celle de la température de l'eau et de l'air sur les *Planorbis* vert. *Zapiski Novoross. Obsch. Estestv.* xii, pp. 21-28.

BATHER, F. A. (1) Shell-growth in *Cephalopoda* (*Siphonopoda*). *Aun. N. H.* (6) i, pp. 298-310, cut; abstr., *J. R. Micr. Soc.* 1888, p. 397.

— (2) Professor Blake and Shell-growth in *Cephalopoda*. *T. c.* pp. 421-427; abstr., *J. R. Micr. Soc.* 1888, p. 559.

BEAUCHAMP, W. M. (1) Erosion of Fresh-water Shells (No. II). *Conch. Exch.* i, p. 49.

— (2) Notes on American Shells. *Op. cit.* ii, pp. 114 & 115.

BEAUDOUIN, J. Faune malacologique vivante de l'arrondissement de Chatillon-sur-Seine (Cote-d'Or). *Bull. Soc. mal. Fr.* v, pp. 377-423.

BEECHER, C. E. A method of preparing, for microscopical study, the radulæ of small species of *Mollusca*. *J. N. Y. Micr. Soc.* iv, pp. 7-12; also *J. Micr. & Nat. Sci.* (n.s.) i, pp. 89-92.

BERGEVIN, E. DE. Compte rendu de l'excursion de Caudebec-en-Caux. *Bull. Soc. Rouen* (3) xxiv, pp. 123-131.

BERGH, R. (1) Nudibranchien vom Meere der Insel Mauritius: in, C. SEMPER'S Reisen im Archipel der Philippinen. II. *Wiss. Result.*, ii *Malacol. Untersuch.* xvi, 1, pp. 755-814, pls. lxxvii-lxxxii. Wiesbaden: 1888, 4to.

— (2) Beiträge zur Kenntniss der Acolidiaden. IX. *Verh. z.-b. Ges.* Wien, xxxviii, pp. 673-706, pls. xvi-xx.

— (3) Die Pleuroleauriden, eine Familie der nudibranchiaten Gaströpoden. *Zool. JB.* iii, pp. 348-364, pls. xi & xii.

- BERNARD, F.** (1) Sur le manteau des Gastéropodes prosobranches et les organes qui en dépendent. C.R. cvi, pp. 681-683; abstr., J. R. Micr. Soc. 1888, p. 399.
- . (2) Recherches anatomiques sur la *Valvata piscinalis*. C.R. cvii, pp. 191-194.
- BLAKE, J. F.** Remarks on Shell-growth in *Cephalopoda*. Ann. N. H. (6) i, pp. 376-380; abstr., J. R. Micr. Soc. 1888, p. 559.
- BLANCHARD, R.** (1) À propos des muscles striés des Mollusques lamellibranches. Bull. Soc. Z. Fr. xiii, pp. 48-55.
- . (2) Sur la structure des muscles des Mollusques lamellibranches. T. c. pp. 74-81, 14 cuts; abstr., J. R. Micr. Soc. 1888, pp. 402 & 935; Rev. Sci. xli, p. 219.
- . (3) De la présence des muscles striés chez les Mollusques. C.R. cvi, pp. 425-427; abstr., J. R. Micr. Soc. 1888, p. 402; CB. Physiol. ii, p. 249.]
- . (4) Sur les Muscles striés des mollusques. C.R. Soc. Biol. (8) v, pp. 125-127.
- BLUM, J.** Einige Schnecken aus dem nördlichen Gebiete des Adriatischen Meeres. Nachr. mal. Ges. xx, pp. 138-140.
- BOAS, F.** Die Mythologie der nordwest-amerikanischen Küstenvölker. Globus, liii, pp. 153-157; abstr., Nachr. mal. Ges. xx, pp. 58 & 59.
- BETTGER, O.** (1) Ueber einige neue oder bemerkenswerthe Landschnecken aus Griechenland. Nachr. mal. Ges. xx, pp. 51-58.
- . (2) Diagnosen neuer Kaukasischen Arten. T. c. pp. 149-155.
- BOURGUIGNAT, J. R.** Histoire des Hélices campyléennes du groupe des Dinariques (olim *Helix pouzolzi*). Bull. Soc. mal. Fr. v, pp. 203-245, pls. ii-iv.
- BOUTAN, L.** (1) Réponse à M. Pelseneer, Professor à l'École normale de Gand. Lille: 1888, 8vo, 6 pp. [Polemical.]
- . (2) Contribution à l'étude de la masse nerveux ventrale (cordons palléaux viscéraux) et de la collerette de la fissurelle. Arch. Z. expér. (2) vi, pp. 375-421, pls. xxi-xxiii.
- BOUVIER, E. L.** (1) Observations anatomiques et systématiques sur quelques familles de Mollusques Prosobranches Sténoglosses. Bull. Soc. mal. Fr. v, pp. 251-286, pls. v-vii [last not yet published].
- . (2) Sur l'anatomie de l'Ampullaire. Bull. Soc. Philom. (7) xii, pp. 5-7.
- . (3) Sur les glandes salivaires annexes des Muricidés. T. c. pp. 118-125.
- . (4) Sur l'anatomie et les affinités zoologiques des Ampullaires. C.R. cvi, pp. 370-372; abstr., J. R. Micr. Soc. 1888, p. 204. [Prelim. notice of (5).]
- . (5) Étude sur l'organisation des Ampullaires. Mém. Soc. Philom. Cent. pp. 63°-85°, pl. ix. Paris: 1888, 4to.

- BRANCSIK, K. (1) Einiges über *Helix faustina* Zgl. und deren Formen im Trencsiner Comitæ, sowie über den Zusammenhang mit *H. rossmäsleri*, Pfr. JB. mal. Ges. xiv, pp. 307-313, 3 cuts.
- (2) *Daudebardia rufa* Drp. gezogen. Nachr. mal. Ges. xx, pp. 50 & 51.
- (3) Eine neue Varietät der *Helix pomatia* L. T. c. pp. 117 & 118.
- (4) Nachträge zur Conchylien-Fauna Bosniens. T. c. pp. 161-169.
- BRAUN, M. (1) Ueber zwei parasitischer Schnecken. CB. Bakt. Parasit. ii, pp. 415 & 416a. [Abstr. of SARASIN, cf. Zool. Rec. xxiv, Moll. p. 24.]
- (2) Zur Frage der Selbstbefruchtung bei den Zwitterschnecken. Humboldt, viii, pp. 18-20.
- (3) Ueber den Harnleiter bei *Helix*. Nachr. mal. Ges. xx, pp. 109-113.
- (4) Ueber die Entwicklung des Harnleiters bei *Helix pomatia*, L. T. c. pp. 129-133.
- (5) Zur Frage der Selbstbefruchtung bei Zwitterschnecken. T. c. pp. 146-148.
- BRAZIER, J. Mollusca: in, Report on a small Zoological Collection from Norfolk Island. P. Linn. Soc. N.S.W. (2) ii, pp. 993-1001.
- BRETONNIÈRE, J. Perforations de roches calcaires par des escargots. C.R. cvii, pp. 566 & 567.
- BROCK, J. (1) Ueber das sogenannte Verrillsche Organ der Cephalopoden. Nachr. Ges. Götting. 1888, pp. 476-478.
- (2) Ueber die sogenannten Augen von *Tridacna* und das Vorkommen von Pseudochlorophyllkörpern im Gefäßsystem der Muscheln. Z. wiss. Zool. xvi, pp. 270-288, pl. xxii; transl., Ann. N. H. (6) i, pp. 435-452; abstr., J. R. Micr. Soc. 1888, pp. 464 & 465.
- BROCKMEIER, H. Zur Fortpflanzung von *Helix nemoralis* und *Hel. hortensis*, nach Beobachtungen in der Gefangenschaft. Nachr. mal. Ges. xx, pp. 113-116 & 158.
- †BROUSMICHE, E. Aperçu général de l'histoire naturelle du Tonkin. Excursions et reconnaissances, xiii, 1887, p. 162.
- BROOKS, H. Preliminary Remarks on the Structure of the Funnel of *Nautilus pompilius*. P. Bost. Soc. xxiii, pp. 380-382, pls. i & ii.
- BUCQUOY, E., DAUTZENBERG, P., & DOLLFUS, G. Les Mollusques marins du Roussillon. II., ii. Fasc. xv, *Pelecypoda*, pp. 25-59, pls. vii-xi.
- BUISSERT, A. (1) Une fonction nouvelle des otocystes. Rev. Quest. Sci. xxiii, pp. 309-312. [Cf. DELAGE, Zool. Rec. xxiii, Moll. p. 9.]
- (2) Des Lamellibranches sans branchies. Op. cit. xxiv, pp. 323 & 324. [Abstr. of PELSENER (12).]
- CALL, R. E. (1) Descriptions of two new species of the genus *Unio*, from the Ozark region of Missouri. P. U. S. Nat. Mus. 1887, x, pp. 498-500, pls. xxvii & xxviii.

- [CALL, R. E.] (2) On the Gross Anatomy of *Campeloma*. Am. Nat. xxii, pp. 491-497, pl. vii, cuts.
- CARAMAGNA, G. Catalogo delle conchiglie Assabesi. Bull. Soc. mal. Ital. xiii, pp. 113-149, pl. viii.
- CARPENTER, H. F. The Shell-Bearing *Mollusca* of Rhode Island. Chapters xxxvii-xliv. Conch. Exch. ii, pp. 2, 3, 18-20, 34-36, 46, 47, 61, 62, 77-79, 89, 90, 109, & 110.
- CARRIEU, —. Note sur le développement des cellules ramifiées du cartilage des céphalopodes et de leurs rapports avec certains éléments des chondromes. C.R. Soc. Biol. (8) v, pp. 577-579.
- CERMENATI, M. Gli scritti malacologici di G. B. Adami. Nat. Sicil. vii, pp. 169-173.
- CHATIN, J. (1) Sur les myélocytes des Invertébrés. C.R. cvii, pp. 504-507; abstr., J. R. Micr. Soc. 1888, p. 929. [Prelim. notice of (2).]
- . (2) Recherches sur les Myélocytes des Invertébrés. Mém. Soc. Philom. Cent. pp. 87°-107°, pl. x. [*Mollusca*, pp. 100°-102°.]
- CLESSIN, S. (1) Die Mollusken-Fauna Österreich-Ungarns und der Schweiz. Pt. 3. Nürnberg: 1888, 8vo, pp. 321-480, cuts.
- . (2) *Cardita*: completed in, Martini & Chemnitz, Conch. Cab. pts. 356 & 360, vol. x, 1, pp. 17-60, pls. vi-xiii.
- . (3) *Chama*: continued in, Martini & Chemnitz, *op. cit.* pts. 360, 362, 366, vol. viii, 5, pp. 1-16, pls. iii-x.
- . (4) *Mytilacea*: continued in, Martini & Chemnitz, *op. cit.* pt. 361, vol. viii, 3, pp. 125-132, pls. xxxiii & xxxiv.
- . (5) *Solenacea*: completed in, Martini & Chemnitz, *op. cit.* pts. 361, 362, 364, & 366, vol. xi, 3, pp. 17-96, pls. viii-xxv.
- . (6) Binnenmollusken aus Südbrasilien. Mal. Bl. x, pp. 165-174.
- . (7) Die Binnenmollusken von Neuseeland. T. c. pp. 175-183. [Reprint of HUTTON, Tr. N. Z. Inst. xvi, xvii, 1884-85; cf. Zool. Rec. xxi, *Moll.* p. 6; xxii, p. 12.]
- . (8) Ueber zwei neue Lamellibranchiaten aus den postglacialen Schichten Schonens. Cfv. Ak. Förh. xlv, pp. 339-342, cuts.
- COATES, H. The Natural History of Kinnoull Hill. vi. The *Mollusca*. P. Perthsh. Soc. i, 1886, pp. 247, 248, & 255.
- COCKERELL, S. C. Conchological Notes from Picardy. J. of Conch. v, pp. 356 & 357.
- COCKERELL, T. D. A. (1) The Gibraltar and Taugier Forms of *Purmacella*. Conch. Exch. ii, pp. 67 & 68.
- . (2) [Rectification of Nomenclature.] T. c. p. 68.
- . (3) *Helix raffrayi*. J. of Conch. v, p. 261.
- . (4) On *Agriolimax montanus* in Colorado. T. c. pp. 358-360.
- . (5) Exhibition of, and notes upon, some *Mollusca* taken at Isleworth, Middlesex. P. Z. S. 1887, pp. 362 & 363.
- . (6) *Hyalina glabra* var. *bicolor*. Sci. Goss. xxiv, p. 20.

[COCKERELL, T. D. A.] (7) Notes on Geographical Distribution. *T. c.* pp. 25, 26, 49, & 50.

— (8) The Genus *Clausilia*. *T. c.* p. 114.

— (9) The British Slugs. *T. c.* p. 115.

— (10) *Physa elliptica*. *T. c.* p. 163.

— (11) On the Distribution of Aquatic Forms. *T. c.* pp. 182-184.
[Nothing new.]

— (12) *Mollusca* in Colorado. *T. c.* p. 257.

COLLIER, E. Land and Freshwater *Mollusca* of Cardiganshire. *J. of Conch.* v, pp. 353-355.

COOKE, A. H. (1) *Otina otis* var. *alba* at Newquay. *T. c.* p. 316.

— (2) On the Article *Purpura* in Tryon's 'Manual of Conchology.' *T. c.* pp. 321-329.

— (3) *Helix revelata* at Newquay. *T. c.* p. 329.

COOPER, J. G. West Coast *Pulmonata*: Fossil and Living (continued). *Proc. Calif. Acad. Sci.* (2) i, pp. 11-25. [*Cf.* *Zool. Rec.* xxiv, *Moll.* p. 7.]

COX, J. O. Contributions to Conchology, No. 1. *P. Linn. Soc. N.S.W.* (2) ii, pp. 1061-1064, pls. xx & xxi.

GRAVEN, A. E. Note sur *Helix harpa*, Say. *J. de Conch.* xxviii, pp. 101-103.

CROSSE, H. (1) Nouveau Catalogue des Mollusques terrestres de l'île de San-Thomé. *T. c.* pp. 12-30, pl. i, figs. 2 & 3.

— (2) Faune malacologique terrestre et fluviatile de l'île du Prince (Côte occidentale d'Afrique). *T. c.* pp. 296-305.

— [See also FISCHER, P.]

CROSSE, H., & FISCHER, P. (1) Observations sur le *Bulimus exaratus*, Müller. *T. c.* pp. 11 & 12.

— (2) Description d'un *Cyclostoma* inédit, provenant de Madagascar. *T. c.* pp. 100 & 101, pl. i, fig. 1.

— (3) Note sur les Cyclostomes des Antilles et description du nouveau genre *Colobostylus*. *T. c.* pp. 229-235.

CUÉNOT, L. Blood of *Invertebrata*. *J. R. Micr. Soc.* 1888, p. 557. [*Cf.* *Zool. Rec.* xxiv, *Moll.* pp. 7 & 35.]

DA COSTA, S. J. *Helix revelata* and *Pupa umbilicata* var. *alba* at Newquay. *J. of Conch.* v, p. 347.

DALL, W. H. (1) Gasteropods and Lamellibranchs: in, AGASSIZ, Three Cruises of the 'Blake,' pp. 62-75. [*Cf. supra.*]

— (2) Lamellibranches sans branchies. *Bull. Soc. Z. Fr.* xiii, pp. 207-209.

— (3) Correspondence. *Conch. Exch.* ii, pp. 9 & 10.

- [DALL, W. H.] (4) Description of a new species of *Hyalina*. P. U. S. Nat. Mus. 1888, p. 214, cuts.
- (5) Some American Conchologists (Annual Address). P. Biol. Soc. Washington, iv, pp. 95-134.
- DARBISHIRE, R. D. Note on Shells of *Argonauta argo*. J. of Conch. v, pp. 371-373, pl. iii.
- DOLLFUS, G. F. (1) Une coquille remarquable des faluns de l'Anjou, *Melongenena cornuta*, Agassiz sp. (*Pyrula*). Bull. Soc. Angers, xvii, pp. 25-56, pls. i-iv.
- (2) Les plages du Croisic (récoltes zoologiques). III. La presqu'île de Penbronn. Feuille Nat. xviii, pp. 93-97.
- [See also BUCQUOY.]
- DONALD, J. Notes on the Land and Fresh-water Shells of Cumberland. Tr. Cumberl. Westmorl. Ass., No. xi, 1886, pp. 150 & 151.
- †DRÖGEMÜLLER, H. Die Fluss-Perlmuschel und die Wiederbelebung der deutscher Perlenfischerei. Circ. deutsch. Fisch. Ver. 1887, pp. 136-142.
- DROUET, H. *Unionide* nouveaux ou peu connus. 5^e article. J. de Conch. xxviii, pp. 103-111.
- DUBOIS, R. (1) Sur le rôle de la symbiose chez certains animaux marins lumineux. C.R. cvii, pp. 502-504.
- (2) Sur la production de la lumière chez le *Pholas dactylus*. C.R. Soc. Biol. (8) v, pp. 451-453; abstr., CB. Physiol. ii, p. 355.
- (3) Mensuration par la méthode graphique, des impressions lumineuses produites sur certains mollusques lamellibranches par des sources d'intensité et de longueurs d'onde différentes. T. c. pp. 714-716; abstr., J. R. Micr. Soc. 1889, pp. 39 & 40.
- DYBOWSKI, W. Die Gasteropoden-Fauna des Kaspischen Meeres. Nach der Sammlung des Akademikers K. E. von Baer. Mal. Bl. x, pp. 65-79, pls. i-iii.
- *FAGOT, B. (1) Contribuciones a la Fauna malacologica de Aragon. Catalogo razonado de los Moluscos del Valle de Esera. Cron. Cientif. 1888, 20 pp.
- *— (2) Contribuciones a la Fauna malacologica de Cataluña. Catalogo razonado de los Moluscos del Valle de Aran. T. c. 16 pp.
- FAUSEK', V. A. K faunye Mollyuskov' syevernago Kavkaza [Molluscan Fauna of the Northern Caucasus]. Trudui St. Petersburg Nat., Zool. xix, Protok. pp. 62 & 63.
- FENN, F. G. (1) *Helix nemoralis* monst. *sinistrorsum*. J. of Conch. v, p. 357.
- (2) *Helix nemoralis* var. *sinistrorsum*. Sci. Goss. xxiv, p. 280.
- FEWKES, J. W. (1) On Arctic Characters of the Surface Fauna of the Bay of Fundy, and the Connection with a Theory of the Distribution of Floating Marine Life. Am. Nat. xxii, pp. 601-612.
- (2) The Sucker on the Fin of *Pterotrachea*. Zool. Anz. xi, pp. 64 & 65; abstr., J. R. Micr. Soc. 1888, p. 205.

- FISCHER, K. Die Flussperlenmuschel (*Unio margaritifera*) im Regierungsbezirk Trier. Verh. Ver. Rheinl. xlv, pp. 292-294; abstr., J. R. Micr. Soc. 1889, p. 376.
- FISCHER, P. (1) Note sur la présence du genre *Corambe* Bergh, dans le bassin d'Arcachon (Gironde). Bull. Soc. Z. Fr. xiii, pp. 215 & 216.
- (2) Note sur une monstruosité du *Triopa clavigera*, Lovén. J. de Conch. xxviii, pp. 131 & 132.
- (3) Sur la classification du genre *Lachesis*, Risso. T. c. pp. 132-136, 2 cuts.
- (4) Curiosités bibliographiques. Manuel de Conchyliologie, exposant les caractères des coquilles marines, fluviatiles et terrestres, et ceux des animaux qui les habitent, par M. de la Pylaie. Paris, 1826. T. c. pp. 269-273.
- (5) Note sur l'animal du genre *Cyclosurus*, Morelet. T. c. pp. 293-296, pl. xiii.
- (6) Note sur la structure interne de la coquille du *Pupa candida*, Lamarck. T. c. pp. 316-320, pl. xiii.
- [See also CROSSE.]
- FISCHER, P., & CROSSE, H. Études sur les Mollusques terrestres et fluviatiles, 10: in, Mission scientifique au Mexique et dans l'Amérique centrale. Zool. vii, ii. Paris: 1888, 4to, pp. 129-176, pls. xliii-xlvi.
- FITZGERALD, H. P. The Mollusca of North Hants. P. P. Hampsh. Field Club, ii, pp. 26-30.
- FLEISCHMANN, A. Die Wasseraufnahme bei Mollusken. Biol. Centralbl. vii, pp. 713-717; abstr., J. R. Micr. Soc. 1888, p. 563.
- FOL, H. (1) Sur la structure microscopique des muscles des Mollusques. C.R. cvi, pp. 306-308; abstr., J. R. Micr. Soc. 1888, p. 199; Am. Nat. xxii, p. 356.
- (2) Sur la répartition du tissu musculaire strié chez divers Invertébrés. T. c. pp. 1178-1180; abstr., J. R. Micr. Soc. 1888, pp. 714 & 715; CB. Physiol. ii, p. 175.
- FOLIN, L. DE. (1) À propos du *Rumina decollata* (Mollusque Gastéropode). Le Nat. x, p. 79; abstr., Nachr. mal. Ges. xx, p. 120.
- (2) Observations sur l'*Helix quimperiana*. T. c. p. 174.
- (3) Observations sur la *Clausilia pauli*, Mabille. T. c. pp. 250 & 251.
- (4) Observations sur l'*Helix constricta*, Boubée. T. c. pp. 240 & 241, cut.
- (5) Observations sur une espèce nouvelle d'*Unio* de France (*Unio baudoni*). T. c. pp. 273 & 274, 4 cuts.
- FOORD, A. H. Catalogue of the Fossil *Cephalopoda* in the British Museum (Natural History), Cromwell Road, S.W. Part 1. *Nauti-loidea*. London: 1888, 8vo, xxxi & 344 pp., 5 cuts.

- FORD, J. (1) *Helices* in Fairmont Park, Philadelphia. Conch. Exch. ii, pp. 7 & 8. [Nothing new.]
- . (2) The *Succinea obliqua*, Say, of Fairmont Park, Philadelphia, with some remarks regarding the relationship of *Succinea totteniana*, Lea. *T. c.* pp. 23 & 24.
- . (3) The Freshwater Mollusks of Fairmont Park. *T. c.* pp. 39–41.
- . (4) Some Remarks on the Migration of Mollusks. *T. c.* pp. 71 & 72.
- . (5) Description of a new species of *Ocenebra*. *P. Ac. Philad.* 1888, p. 188, outa.
- FOREL, F. A. Calcaire perforé par l'*Helix aspersa*. *Arch. Sci. nat.* (3) xx, p. 576.
- FRANZENAU, A. Adalékok a borsodmegyei Apátfalva környékének geológiájához. Term. füzetek, xi, pp. 61–64; [and in German]—Daten zur Geologie der Umgebung von Apátfalva in comitat Borsod; pp. 90–94.
- FRENCH, J. F. (1) Preliminary List of the Land and Freshwater *Mollusca* occurring in the Neighbourhood of Felstead, Essex. *Ess. Nat.* ii, pp. 1–3.
- . (2) (Additions and Corrections.) *T. c.* pp. 46 & 47.
- . (3) On the Alluvial and other Recent Deposits at Felstead, Essex. *T. c.* pp. 56–60.
- FURTADO, A. Sur le *Bulimus exaratus*, Müller. *J. de Conch.* xxviii, pp. 5–10, pls. ii & iii.
- GAIN, W. A. Respiration of *Ancylus fluvialilis*. *J. of Conch.* v, p. 331.
- GALEAZZI, R. Des éléments nerveux des muscles de fermeture ou adducteurs des bivalves. *Arch. Ital. Biol.* x, pp. 388–393, 1 pl.
- GALWEY, [MISS] H. On the Marine Shells of Magilligan Strand, County Tyrone. *J. of Conch.* v, pp. 267–270.
- †GANONG, W. F. (1) On the Zoology of the Invertebrate Animals of Passamaquoddy Bay. *Bull. Nat. Hist. Soc. New Brunswick*, iv, 1885, p. 87.
- . (2) The Marine *Mollusca* of New Brunswick. *Op. cit.* vi, 1887, pp. 17–61.
- GARNAULT, P. (1) Recherches anatomiques et histologiques sur le *Cyclostoma elegans*. *Act. Soc. L. Bord.* xli, pp. 129–158; also separately, Paris & Bordeaux: 1888, 8vo, 152 pp., 9 pls.; abstr., *J. R. Micr. Soc.* 1888, pp. 716 & 717. [Cf. *Zool. Rec.* xxiv, *Moll.* pp. 9 & 30.]
- . (2) Recherches sur la structure et le développement de l'œuf et de son follicle chez les Chitonides. *Arch. Z. expér.* (2) vi, pp. 83–116, pls. vi & vii; abstr., *J. R. Micr. Soc.* 1888, p. 933.

- [GARNAULT, P.] (3) Sur la structure des organe génitaux, l'ovogénèse et les premiers stades de la fécondation chez l'*Helix aspersa*. C.R. cvi, pp. 675-678; abstr., Rev. Sci. xli, p. 315; J. R. Micr. Soc. 1888, pp. 398 & 399.
- . (4) Sur l'organisation de la *Valvata piscinalis*. C.R. cvi, pp. 1813-1815.
- . (5) Sur la structure des organes génitaux, l'ovogénèse et les premiers stades de la fécondation chez l'*Helix aspersa*. C.R. Soc. L. Bord. 1888, pp. xviii-xxii. [Prelim. notice of (3).]
- . (6) Note sur l'organisation de la *Valvata piscinalis*. T. c. pp. xxii-xxv.
- . (7) Un cas de castration parasitaire chez l'*Helix aspersa*. T. c. pp. liv-lvii [lvii issued Jan. 1889].
- . (8) Rectification. Zool. Anz. xi, pp. 623 & 624; C.R. Soc. L. Bord. 1888, p. xxvi.
- . (9) Sur les phénomènes de la fécondation chez l'*Helix aspersa* et l'*Arion empiricorum*. T. c. pp. 731-736 [to be continued].
- GEHRS, C. Nachträge zu meinem im 32. Jahresberichte veröffentlichten Verzeichniss der hier vorkommenden Mollusken. J. Ber. Ges. Hannov. xxxiv-xxxvii, pp. 68 & 69.
- GIARD, A. (1) La Castration parasitaire. Nouvelles recherches. Bull. Sci. Fr. Belg. (3) i, pp. 12-45. [*Mollusca*, p. 44.]
- . (2) Fragments biologiques. ix. Le Gulf-Stream sur les côtes du Pas-de-Calais et de la mer du Nord. T. c. pp. 296 & 297.
- . (3) Fragments biologiques. xii. Castration parasitaire probable chez les *Pterotrachea*. T. c. pp. 309 & 310.
- . (4) Le Laboratoire de Wimereux en 1888. (Recherches fauniques.) T. c. pp. 492-513.
- GIRARD, A. Note sur les *Helix catocyphia*, Bourg, *hyperplatea*, Servain, et *pisana* de Portugal. J. Sci. Lisb. xii, No. xlvii, pp. 160-166, pl.
- GODET, P. Mollusques du lac Tanganyika. Bull. Soc. Neuchatel, xvi, p. 298. [Nothing new.]
- GODWIN-AUSTEN, H. H. (1) Land and Fresh-water *Mollusca* of India, including South Arabia, Baluchistan, Afghanistan, Kashmir, Nepal, Burmah, Pegu, Tenasserim, Malay Peninsula, Ceylon, and other Islands of the Indian Ocean. Part vi [text]. London: 1888, 8vo, pp. 207-257.
- . (2) Descriptions of new Land-Shells from the Andaman and Nicobar group of Islands in the Bay of Bengal. Ann. N. H. (6) ii, pp. 55-59.
- . (3) On some Land-Mollusks from Burmah, with Descriptions of some new species. Part i. P. Z. S. 1888, pp. 240-245.
- GOLDFUSS, —. (1) *Helix hortensis* in heidnischen Wohnstätten. Z. naturw. lxi, p. 213.

- [GOLDFUSS, —.] (2) Ueber gefälzte Conchylien auf die Philippinen. *T. c.* p. 430.
- . (3) Conchylien der Keller. *T. c.* pp. 628 & 629.
- °GRABER, V. (1) Leitfaden der Zoologie. Leipzig : 1888, 8vo, iv & 240 pp.
- °——. (2) Die äusseren mechanischen Werkzeuge der wirbellosen Thiere. *Wissen. d. Gegenwart.* xlv. Leipzig : 1886, 8vo, 8 & 224 pp., 171 figs. [*Mollusca*, pp. 128–167.]
- GRANGER, A. Les Bulimes de France. (Mollusques terrestres.) *Le Nat.* x, pp. 59 & 60, cuts. [Nothing new.]
- GRANT, U. S. Notes on the Molluscan Fauna of Minnesota. *Geol. & N. H. Survey Minnesota*, xvi, pp. 481–484.
- GREDLER, V. (1) Zur Conchylien-Fauna von China. xiii. Stück. *JB. mal. Ges.* xiv, pp. 343–373.
- . (2) Beobachtungen im Terrarium. *Nachr. mal. Ges.* xx, pp. 133–137.
- GRENACHER, H. Abhandlungen zur vergleichenden Anatomie des Auges. II. Des Auge der Heteropoden, geschildert am *Pterotrachea coronata*, Forst. *Abh. Ges. Halle*, xvii, pp. 1–64, pls. i & ii. [Issued separately, 1886, cf. *Zool. Rec.* xxiii, *Moll.* p. 12.]
- †GRIEB, A. Ricerche intorno ai nervi del tubo digerente dell' *Helix aspersa*. *Mem. mat. e fis. Soc. Ital. Sci. Napoli* (3) vi ; issued separately, 1887 ; abstr., *Bull. Soc. mal. Ital.* xiii, pp. 41 & 42.
- GRIEG, J. A. Undersøgelser over dyrelivet i de vestlandske fjorde. I. Moser. *Bergens Mus. Aarsber.* 1887, 13 pp. [*Mollusca*, pp. 5–9.]
- GRIFFITHS, A. B. (1) Further researches on the Physiology of the *Invertebrata*. *P. R. Soc.* xlv, pp. 325–328 ; abstr., *J. R. Micr. Soc.* 1888, p. 932.
- . (2) Researches on the Problematical Organs of the *Invertebrata*—especially those of the *Cephalopoda*, *Gasteropoda*, *Lamellibranchiata*, *Crustacea*, *Insecta*, and *Oligochæta*. *P. R. Soc. Edinb.* xiv, pp. 230–238, cuts.
- GROBEN, C. (1) Die Pericardialdrüse der Lamellibranchiaten. Ein Beitrag zur Kenntniss der Anatomie dieser Molluskenclasse. *Arb. z. Inst. Wien*, vii, pp. 355–444, pls. i–vi ; also separately, Vienna : 1888, 8vo ; abstr., *J. R. Micr. Soc.* 1888, pp. 720 & 721.
- . (2) Zur Morphologie des Pteropodenkörpers. *Arb. z. Inst. Wien*, viii, pp. 155–157 ; abstr., *J. R. Micr. Soc.* 1889, p. 194.
- . (3) Ueber die Pericardialdrüse der Lamellibranchiaten. *Verh. z.-b. Wien*, xxxviii, SB. p. 18.
- . (4) Wasseraufnahme bei Mollusken. *Op. cit.* xxxvii, 1887, SB. pp. 14 & 15. [Nothing new.]
- GUERNE, J. DE. (1) Campagnes scientifiques du yacht monégasque L'Hirondelle. Troisième Année 1887. Excursions zoologiques dans les îles de Fayal et de San Miguel (Açores). Paris : 1888, 8vo, 111 pp., 1 pl., 9 cuts.

- [GUERNE, J. D.] (2) Description d'un *Pisidium* nouveau des Açores. P.-v. Soc. Mal. Belg. xvii, pp. lviii-lxi. [Cf. Zool. Rec. xxiv, *Moll.* pp. 11 & 83.]
- HAGENMÜLLER, P. Matériaux pour servir à l'histoire de la malacologie de la Corse et de la Sardaigne. Bull. Sol. mal. Fr. v, pp. 1-54.
- HALLER, B. Die Morphologie der Prosobranchier, gesammelt auf einer Erdumsegelung durch die Königl. italienische Korvette "Vettor Pisani." Morph. JB. xiv, pp. 54-169, pls. iii-viii.
- HALLER, B., & PELSENER, P. Réplique à M. Boutan. Bull. Sci. Fr. Belg. (3) i, p. 514. [Polemical.]
- HANITSCH, R. Contributions to the Anatomy and Histology of *Limax agrestis*. P. Biol. Soc. Liverp. ii, pp. 152-170, pls. x-xii.
- HARLEY, G., & H. S. The Chemical Composition of Pearls. P. R. Soc. xliii, pp. 461-465.
- HARTMAN, W. D. (1) A bibliographic and synonymic Catalogue of the genus *Auriculella*, Pfeiffer. P. Ac. Philad. 1888, pp. 14 & 15.
- . (2) A bibliographic and synonymic Catalogue of the genus *Achatinella*. T. c. pp. 16-56, pl. i.
- . (3) New Species of Shells from the New Hebrides and Sandwich Islands. T. c. pp. 250-252, pl. xiii.
- HARTWIG, W. Zur Fortpflanzung einiger Landschnecken, *Helix lactea* L., and *H. nemoralis* L. Zool. Gart. xxix, pp. 148-151.
- HASELOFF, B. Ueber den Krystallstiel der Muscheln, nach Untersuchung verschiedener Arten der Kieler Bucht. Kiel. Inaug.-Diss., Osterode: 1888, 8vo, 28 pp., 1 pl.; Biol. Centralbl. vii, pp. 683 & 684; abstr., J. R. Micr. Soc. 1888, p. 566; Am. Nat. xxii, p. 936.
- HAPE, W. Preliminary Report upon the Fauna and Flora of Plymouth Sound. J. Mar. Biol. Assoc. ii, pp. 153-193. [*Mollusca*, pp. 178-185.]
- HEDLEY, C. Description of a new Slug, with notes on other Terrestrial *Mollusca*. P. R. Soc. Queensl. v, 1888, pp. 150-153, pl.
- HEILPRIN, A. (1) The Animal Life on Our Sea-Shore. Philadelphia: 1888, 12mo.
- . (2) Contributions to the Natural History of the Bermuda Islands. P. Ac. Philad. 1888, pp. 302-328, pls. xiv-xvi. [*Mollusca*, pp. 323-328.]
- HELE, [MISS] F. M. *Bulimus decollatus* in captivity. J. of Conch. v, p. 362.
- HERDMAN, W. A. Egg masses on *Hydrobia ulva*. Nature, xxxviii, p. 197.
- HEUDE, M. Diagnoses Molluscorum novorum, in Sinis collectorum. J. de Conch. xxviii, pp. 235-243 & 305-309.
- HIDALGO, J. G. (1) Recherches conchyliologiques de M. Quadras aux îles Philippines (suite). Addition aux genres *Cochlostyla*, *Helix*, et *Nanina*. T. c. pp. 30-97, pls. iv & v.

- [HIDALGO, J. G.] (2) Descriptions d'espèces nouvelles des Philippines. *T. c.* pp. 310-312.
- HINCKLEY, A. A. (1) Record of a Short Collecting Tour in White Hardin and Gallatin Counties, Ill. *Conch. Exch.* i, p. 56. [Notling new.]
- . (2) Notes on the *Strepomatidæ* of Illinois. *Op. cit.* ii, pp. 93 & 94.
- HOLM, T. Beretning om de paa Fyllas Togt i 1884 foretagne zoologiske Undersøgelser i Grønland. 8vo, 19 pp.
- HOLZINGER, J. M. Notes on the *Mollusca* of Winona County. *Geol. & N. H. Survey Minnesota*, xvi, pp. 485-491.
- HOYLE, W. E. (1) Note on the Hectocotylisation of the *Cephalopoda*. *Rep. Brit. Ass.* 1887, p. 768.
- . (2) Report on the Biological Investigations carried on into the Waters to the West of Lewis, in July and August, 1887. *Rep. Fish. Scotl.* vi, pt. iii, pp. 215-222, pl. xv.
- HUBRECHT, A. A. W. *Dondersia festiva*, gen. et sp. nov. Donders-Feestbundel, pp. 324-339, pls. viii & ix; also separately, Amsterdam: 1888, 8vo, 16 pp., 2 pls.
- HUDSON, B. Hogg's List of the *Mollusca* of the Neighbourhood of Stockton-on-Tees; with Annotations. *J. of Conch.* v, pp. 256-260.
- HUNT, A. R. Raised Beaches *versus* High-Level Beaches. *Nature*, xxxvii, p. 275.
- HUTTON, F. W. [See CLESSIN (7).]
- HYATT, A. Values in Classification of the Stages of Growth and Decline, with Propositions for a new Nomenclature. *P. Bost. Soc.* xxiii, pp. 396-407.
- IHERING, H. v. Die Stellung der Pteropoden. *Nachr. mal. Ges.* xx, pp. 30-32.
- IMHOFF, O. E. Fauna der Süßwasserbecken. *Zool. Anz.* xi, pp. 168-172 & 185-189. [*Mollusca*, p. 187].
- JACKSON, R. T. (1) The Development of the Oyster with Remarks on Allied Genera. *P. Bost. Soc.* xxiii, pp. 531-556, pls. iv-vii; abstr., *J. R. Micr. Soc.* 1889, p. 375.
- . (2) Catching Fixed Forms of Animal Life on Transparent Media for Study. *Science*, xi, p. 230.
- JACKSON, W. H. [See ROLLESTON, G.]
- JOHNSTON, R. M. Observations with respect to the nature and classification of the Tertiary Rocks of Australasia. *P. R. Soc. Tasm.* 1887, pp. 135-207.
- JONES, J. M. The Conchologist in Bermuda. *Conch. Exch.* ii, p. 118.
- JOUBIN, L. (1) La ponte d'*Eledone* et de la Sèche. *Arch. Z. expér.* (2) vi, pp. 155-163, cut.
- . (2) Structure et développement des glandes salivaires des Céphalopodes. *C.R. Ass. Fr. Sci.* xvi, pp. 641-643.

- JOUSSEAUME, F. Description des Mollusques recueillis par M. le Dr. Faurot dans la mer Rouge et le Golfe d'Aden. Mém. Soc. Z. Fr. i, pp. 165-223.
- JUKES-BROWNE, A. J. Rock-boring *Mollusca*: a Subject for Seaside Study. Life Lore, i, pp. 34, 35, & 53-55, cuts. [Popular.]
- KALIDE, G. (1) Beitrag zur Kenntniss der Muskulatur der Heteropoden und Pteropoden. Zugleich ein Beitrag zur Morphologie des Molluskenfusses. Z. wiss. Zool. xlv, pp. 337-377, 3 cuts; also separately, Inaug.-Diss., Leipzig: 1888, 8vo.; abstr., J. R. Micr. Soc. 1888, pp. 560 & 561.
- . (2) Vörläufe Mittheilungen über Studien am Gastropoden- und am Pectenauge. Zool. Anz. xi, pp. 679-683 & 698-703; abstr., J. R. Micr. Soc. 1889, pp. 38 & 39.
- KEEP, J. West Coast Shells. A Familiar Description of the Marine, Fresh-water, and Land Mollusks of the United States, found west of the Rocky Mountains. San Francisco: 1888, 8vo, 230 pp., 1 pl., 181 cuts.
- KELLER, C. Die Wanderung der marinen Thierwelt im Suezcanal. Zool. Anz. xi, pp. 359-364 & 389-395.
- KEW, H. W. (1) *Limnaea truncatula* floating. J. of Conch. v, p. 329.
- . (2) *Sphærium corneum* upon the tarsus of *Dytiscus marginalis*. T. c. p. 363.
- KEYES, C. R. The sedentary habits of *Platyceras*. Am. J. Sci. (3) xxxvi, pp. 269-272.
- KLOTZ, J. Beitrag zur Entwicklungsgeschichte und Anatomie des geschlechtsapparates von *Lymnaeus*. Jen. Z. Nat. xxiii, pp. 1-40, pls. i & ii; abstr., J. R. Micr. Soc. 1889, p. 195.
- KOBELT, W. (1) Rossmässler's Iconographie der Europäischen Land- & Süsswasser-Mollusken. Mit vorzüglicher Berücksichtigung der Europäischen noch nicht abgebildeten Arten. New series, iii, 5, 6, pp. 37-60, pls. lxxxi-xc; iv, 1 & 2, pp. 1-40, pls. xci-c. Wiesbaden: 1888, 4to.
- . (2) Iconographie der schalentragenden europäischen Meeresconchylien, viii, pp. 1-16, pls. xxix-xxxii. Cassel: 1888, 4to.
- . (3) *Arcidae*: continued in, Martini & Chemnitz, Conch. Cab., pts. 363 & 367, vol. viii, 2, pp. 1-56, pls. v-xvi.
- . (4) *Cerithiidae*: commenced in, Martini & Chemnitz, *op. cit.* pt. 359, vol. i, 26, pp. 1-32, pls. i-vi.
- . (5) *Pecten*: completed in, Martini & Chemnitz, *op. cit.* pts. 357 & 358, vol. vii, 2, pp. 225-296, pls. lxi-lxxii.
- . (6) Die geographische Verbreitung der Land-Deckelschnecken. JB. mal. Ges. xiv, pp. 314-342.
- . (7) Diagnose einer neuen *Arca*. T. c. p. 374.

- [KOBELT, W.] (8) Die Bivalven Nieder-Andalusiens. Nachr. mal. Ges. xx, pp. 16-30.
- (9) Die deutschen Bivalven. Ein Vorschlag zu gemeinsamer Arbeit. T. c. pp. 47-50.
- (10) Diagnose einer neuen *Xerophile*. T. c. p. 119.
- (11) Schnecken an Nadelhölzern. T. c. pp. 120 & 121.
- (12) Abstract of MELVILL (7). T. c. pp. 155-158.
- (13) Diagnose einer neuen *Arca*. T. c. p. 176.
- KÖHLER, R. (1) Sur la double forme de spermatozoïdes chez les *Murex brandaris* et *trunculus* et le développement de ces spermatozoïdes. C.R. cvi, pp. 299-301; abstr., J. R. Micr. Soc. 1888, p. 200. [Prelim. notice of (2).]
- (2) Recherches sur la double forme des spermatozoïdes chez le *Murex brandaris* et le *M. trunculus*. Rec. Z. Suisse, v, pp. 101-150, pls. vi & vii; abstr., J. R. Micr. Soc. 1889, pp. 371 & 372.
- KÖNEN, A. VON. Ueber neuere Aufschlüsse im Diluvium bei Göttingen. Nachr. Ges. Götting. pp. 253-257.
- KRUKENBERG, C. F. W. (1) Die Durchfluthung des Isthmus von Suez in chorologischer, hydrographischer und historischer Beziehung. Wissenschaftliche Ergebnisse meiner Reise vom Étang de Berre über Marseille und Triest nach Suakim und Massaur. i, ii. Vergl. Physiol. Stud. (2) v, pp. 1-156, 2 pls.; also separately, Heidelberg: 1888, 8vo.
- (2) Neue Thatfachen für eine vergleichende Physiologie der Phosphorescenz-erscheinungen bei Thieren und bei Pflanzen. Op. cit. (2) iv, 1887, pp. 77-142. [*Mollusca*, pp. 93 & 94, footnote.]
- † — (3) Fortgesetzte Untersuchungen über Skeletine. Z. Biol. xxii, 1886, pp. 241-260, 1 pl.
- KUNSTLER, —. Sur de nouveaux Vers remarquables. C.R. cvi, pp. 553 & 554; abstr., Nachr. mal. Ges. xx, p. 120.
- LACAZE-DUTHIERS, H. DE. (1) La classification des Gastéropodes, basée sur les dispositions du système nerveux. T. c. pp. 716-724, 5 cuts; abstr. J. R. Micr. Soc. 1888, p. 401.
- (2) Sur les avantages de l'emploi de la lumière électrique dans les observations de Zoologie marine. T. c. pp. 718-720.
- LACAZE-DUTHIERS, H. DE. & PRUVOT, G. Sur le développement de la *Philine aperta*. C.B. Ass. Fr. Sci. xvi. pp. 643-649.
- LANKESTER, E. R. The Cœlom and the Vascular System of *Mollusca* and *Arthropoda*. Nature, xxxvii, p. 498; abstr., J. R. Micr. Soc. 1888, pp. 395 & 396.
- LAURIE, M. The Organ of Verrill in *Loligo*. Q. J. Micr. Sci. xxix pp. 97 & 98, pl. xi; abstr., J. R. Micr. Soc. 1888, p. 932.
- LAYARD, E. L. (1) A Shell Collector's Difficulty. Nature, xxxviii, p. 566.
- (2) Extract from a letter concerning the distribution of some Land-Shell of the genus *Stenogyra*. P. Z. S. 1888, pp. 358 & 359.

LENDENFELD, R. v. Bemerkungen zu Riefstahl's Wachstumstheorie der Cephalopoden-Schalen. Zool. JB. iii, pp. 317 & 318.

†LETELLIER, A. Étude de la fonction urinaire chez les Mollusques Acéphales. Paris Thèse. Poitiers : 1888, 8vo, vi & 160 pp., 3 pls. ; abstr., Rev. Sci. xlii, pp. 435-437.

LETOURNEUX, A. Des Hydrocènes de Dalmatie. Bull. Soc. mal. Fr. v, pp. 247-250.

LIERENA, J. Discografia y meteorología de los Mares del Globo (continuación). An. Soc. Arg. xxv, pp. 5-288 ; xxvi, pp. 133-280 (*continuará*).

LO BIANCO, S. Notizie biologiche riguardanti specialmente il periodo di maturità sessuale degli animali del golfo di Napoli. MT. z. Stat. Neap. viii, pp. 385-440. [*Mollusca*, pp. 414-424.]

LOCARD, A. (1) Prodrôme de malacologie française—Mollusques marins (suite et fin). Ann. Soc. Agr. Lyon (5) x, pp. 1-175. [*Cf.* Zool. Rec. xxiv, *Moll.* p. 15, LOCARD (1, 2).]

— (2) Contributions à la faune malacologique française. xi. Monographie des espèces appartenant au genre *Pecten*. Ann. Soc. L. Lyon, xxxiv, pp. 133-287 ; also separately, Lyons : 1888, 8vo, 159 pp.

— (3) xii. Études critiques sur les *Helix* du groupe de l'*Helix rufescens*, Pennant (*Helix striolata*, *H. rufescens*, *H. montana*, *H. cæolata*, *H. circinata*, *H. clandestina*). T. c. pp. 309-370.

— (4) Revision des espèces françaises appartenant au genre *Modiola*. Bull. Soc. mal. Fr. v, pp. 77-119, pl. i.

— (5) Recherches sur la coquille des pèlerins. Lyons : 1888, 8vo, 78 pp.

LUSTIG, A. Les microorganismes de *Mytilus edulis*. Arch. Sci. méd. xii, p. 323 ; Arch. Ital. Biol. x, pp. 393-400.

MABILLE, J. (1) De quelques coquilles nouvelles. Bull. Soc. Philom. (7) xii, pp. 73-82.

— (2) Molluscorum novorum diagnoses succinctæ. Op. cit. (7) vi, 1882, pp. 132-147.

M'ALPINE, D. (1) Observations on the Movements of the Entire Detached Animal, and of Detached Ciliated Parts of Bivalve Molluscs, viz., Gills, Mantle-Lobes, Labial Palps, and Foot. P. R. Soc. Edin. xv, pp. 173-204, pls. i & ii.

— (2) Observations on the Movements of Detached Gills, Mantle-Lobes, Labial Palps, and Foot in Bivalve Molluscs. Tr. R. Soc. Vict. xxiv, pp. 131-149 ; abstr., J. R. Micr. Soc. 1889, p. 40.

MACARÉ, RETHAAN. Collection Macaré. Catalogue de la précieuse et superbe collection de coquilles d'espèces vivantes et de quelques livres traitant de la Conchyliologie le tout délaissé par Madame la Douairière F. J. M. Rethaan Macaré, née Ontijd, dont la vente publique aura lieu le lundi 6 août 1888, &c. Utrecht : 1888, 4to, 62 pp.

- McCoy, F. *Ommastrephes gouldi*. Prodr. Zool. Vict., Dec. xvii, pls. 169 & 170.
- M'INTOSH, W. C. Notes from the St. Andrews Marine Laboratory (under the Fishery Board for Scotland).—No. ix. (2) On the Development of Mussels (*Mytilus edulis*). Ann. N. H. (6) ii, pp. 467–462; abstr., J. R. Micr. Soc. 1889, p. 40.
- MACMUNN, C. A. Further Observations on some of the Applications of the Spectroscope in Biology, with special reference to the presence of Chlorophyll in Animals. P. Birmingham. Phil. Soc. v, 1887, pp. 177–218, pls. ix & x. [*Mollusca*, pl. ix, fig. 4.]
- MADISON, J. Notes on *Limnæa peregra* vars. *burnetti* and *lacustris*. J. of Conch. v, pp. 260 & 261.
- MALTZAN, H. v. (1) Diagnosen neuer Landschnecken von Haiti, gesammelt von Hermann Rolle, 1867–88. Nachr. mal. Ges. xx, pp. 177–182.
- . (2) *Gorgonia flabellum* mit *Orula* als Beispiel von Anpassung an die Farbe der Umgebung. SB. nat. Fr. 1888, p. 53.
- . (3) *Helix rossmüssleri* und *Clausilia rupestris* an Nadelholz. T. c. p. 63.
- MARION, A. F., & KOWALEWSKY, A. Sur les espèces de *Proneomenia* des côtes de Provence. C.R. cvi, pp. 529–532.
- MARK, E. L. Simple Eyes in Arthropods. Bull. Mus. C. Z. xiii, 1887, pp. 49–105, 5 pls. [*Mollusca*, pp. 88 & 89, footnote.]
- MARSH, W. A. Brief Notes on the Land and Freshwater Shells of Mercer Co., Ill. Conch. Exch. i, pp. 42, 43, 50, 51, 62, 63; *op. cit.* ii, pp. 4, 5, 20, 21, 36, 37, 48–50, 65–67, 80, 81, 90–92, 110 & 111.
- MARSHALL, W. Die Tiefsee und ihr Leben. Nach den neuesten Quellen gemeinfasslich dargestellt. Leipzig: 1888, 8vo, 343 pp., 4 pls., 114 cuts. [*Mollusca*, pp. 283–296.]
- MARTENS, E. v. (1) *Nerita*: continued in, Martini & Chemnitz, Conch. Cab., pt. 365, vol. ii, 11, pp. 65–104, pls. ix–xiii.
- . (2) Ist *Helix pomatia* in Norddeutschland einheimisch? °Naturw. Wochenschr. iii, 3; reprint, Nachr. mal. Ges. xx, pp. 169–176.
- . (3) Vorzeigung einiger Conchylien: *Helix ciliata* und *Clausilia dubia* an Nadelholz. SB. nat. Fr. 1888, p. 63.
- . (4) *Conus prometheus* und *Strombus fasciatus* von Banji. T. c. pp. 63 & 64.
- . (5) Zwei neue Schneckenarten, *Bulimus proclivis*, *Anodonta legumen*. T. c. pp. 64 & 65.
- . (6) Conchylien aus Kamerun von Zeuner gesammelt, *Limicolaria prætecta*, n. sp. T. c. p. 148.
- . (7) Das Vorkommen von *Helix pomatia* im Nördlicheren Europa. T. c. p. 149.

MARTINI & CHEMNITZ. Systematisches Conchylien-Cabinet, pts. 356-367. Nürnberg : 1888, 4to. Pt. 356, vol. x, 1, *Cardita*, pp. 17-40, pls. vi-xi (CLESSIN); pt. 357, vol. vii, 2, *Pecten*, pp. 225-256, pls. lxi-lxvi (KOBELT); pt. 358, vol. vii, 2, *Pecten*, pp. 257-296 & title, pls. lxxvii-lxxii (KOBELT); pt. 359, vol. i, 26, *Cerithium*, pp. 1-32, pls. i-vi (KOBELT); pt. 360, vol. viii, 5, *Chama*, pp. 1-8, pls. iii-vi (CLESSIN); vol. x, 1, *Cardita*, pp. 41-60 & title, pls. xii & xiii (CLESSIN); pt. 361, vol. xi, 3, *Solenacea*, pp. 17-32, pls. viii-xi (CLESSIN); vol. viii, 3, *Mytilacea*, pp. 125-132, pls. xxxiii & xxxiv (CLESSIN); pt. 362, vol. xi, 3, *Solenacea*, pp. 33-48, pls. xii-xvii (CLESSIN); vol. viii, 5, *Chama*, pp. 9-16 (CLESSIN); pt. 363, vol. viii, 2, *Arca*, pp. 1-32, pls. v-x (KOBELT); pt. 364, vol. xi, 3, *Solenacea*, pp. 49-72, pls. xviii-xxiii (CLESSIN); pt. 365, ii, 11, *Nerita*, pp. 65-104, pls. ix-xiii (MARTENS); pt. 366, vol. xi, 3, *Solenacea*, pp. 73-96, pls. xxiv & xxv (CLESSIN), vol. viii, 5, *Chama*, pls. vii-x (CLESSIN); pt. 367, vol. viii, 2, *Arca*, pp. 33-56, pls. xi-xvi (KOBELT).

MELVILL, J. C. (1) Descriptions of six new species of *Pecten*. J. of Conch. v, pp. 279-281, pl. ii, figs. 5-10.

— (2) Descriptions of fifteen new species of *Mitra*. T. c. pp. 281-288, pl. ii, figs. 11-25.

— (3) Description of a new species of *Cypræa*. T. c. pp. 288 & 289, pl. ii, fig. 26.

— (4) *Helix lapicida* (L.) var. *albina* (Menke) in Derbyshire. T. c. p. 316.

— (5) Notes on *Mitra* (*Costellaria*) *rugosa* (Swainson). T. c. pp. 332-335.

— (6) Two New *Siphonalia* from Japan. T. c. pp. 348 & 349, cuts.

— (7) A survey of the genus *Cypræa* (Linn.), its Nomenclature, Geographical Distribution, and Distinctive Affinities. A Catalogue of the Species and Varieties of *Cypræa*. Mem. Proc. Manch. Soc. (4) i, pp. 184-252, pls. i & ii; also separately, Manchester: 1888, 8vo. abstr., Nachr. mal. Ges. xx, pp. 155-158. [Cf. KOBELT (12).]

MEYER, O. Bibliographical Notes on the two books of Conrad on Tertiary Shells. Am. Nat. xxii, pp. 726 & 727.

MICHAEL, G. W. On collecting and preserving Chitons. Conch. Exch. ii, p. 8.

MILNE, J. G. *Amalia gagates* in Cheshire. Naturalist, 1888, p. 48.

MILNES, H. *Helix lapicida* monst. *scalaris*, Charp. in Derbyshire. J. of Conch. v, p. 316.

MÖBIUS, K. Ueber die Schwellung des Fusses der Muschel *Solen pellucidus* Penn. SB. nat. Fr. 1888, p. 34; abstr., J. R. Micr. Soc. 1889, p. 201.

MÖLLENDORFF, O. F. v. (1) Bemerkungen zu Hidalgo's Aufzählung der philippinischen Landschnecken. Mal. Bl. x, pp. 115-131.

- [MÖLLENDORFF, O. F. v.] (2) Materialien zur Fauna von China. *T. c.* pp. 132-143, pl. iv, figs. 1-6.
- (3) Von den Philippinen, iv. Nachträge und Berichtigungen zur Fauna von Cebu. *T. c.* pp. 144-164, pl. iv, figs. 7-12.
- (4) Diagnoses specierum novarum sinensium. *Nachr. mal. Ges.* **xx**, pp. 38-44.
- (5) Von den Philippinen, v. *T. c.* pp. 65-90 & 97-109.
- (6) Diagnoses novarum specierum ex insulis Philippinis. *T. c.* pp. 141-145.
- MONTEROSATO, T. DI Molluschi del Porto di Palermo specie e varietà. *Bull. Soc. mal. Ital.* **xiii**, pp. 161-180.
- MORELET, A. Description d'une espèce nouvelle d'*Achatina* d'Assinie. *J. de Conch.* **xxviii**, pp. 97-99, pl. i, fig. 4.
- MUNTHE, H. Pteropoder i Upsala Universitets Zoologiska Museum samlade af Kapten G. von Schéele. *Bih. Sv. Ak. Handl.* **xiii**, iv, 2, 33 pp., 1 pl.
- NASSONOFF, N. W. O. (1) [On Boring Sponges of the Family *Clionidæ*.] *Nachr. k. Ges. Moskau*, i, pp. 236-248.
- (2) Les éponges perforantes de la famille des Clionidés. *Arch. slav. biol.* iv, pp. 362-366; abstr., *J. R. Micr. Soc.* 1888, pp. 965 & 966. [Abstr. of (1).]
- NECHAY, A. Geologicheskaya izsledovaniya v' okrestnostyakh Chistopolya. *Trudni obsch. Kazan. estest.* **xvii**, 5, 1887, 20 pp.; abstr., *Nature*, **xxxviii**, p. 160.
- NEHRING, A. (1) Einige Notizen über das Vorkommen resp. Nichtvorkommen der *Helix pomatia* im Diluvium Deutschlands. *SB. nat. Fr.* 1888, pp. 150 & 151.
- (2) Vorläufige Entgegnung auf Wollemaann's Abhandlung über die Diluvialsteppe. *T. c.* pp. 153-166. [*Mollusca*, pp. 160-163.]
- NELSON, W. A Day's Collecting near Howden, Yorks. *J. of Conch.* **v**, pp. 2 2-267.
- NEUMAYR, M. Ueber *Paludina diluviana*, Kunth. *Z. geol. Ges.* **xxxix**, 1887, pp. 605-611, pl. **xxvii**; abstr., *Nachr. mal. Ges.* **xx**, p. 122.
- NORMAN, A. M. Museum Normanianum; or A Catalogue of the *Invertebrata* of Europe, and the Arctic and North Atlantic Oceans, which are contained in the collection of the Rev. Canon A. M. Norman, M.A., D.C.L., F.L.S. iv. *Mollusca marina*. v. *Brachiopoda*. Printed for private distribution. Durham: 1888, 8vo, 30 pp.
- OEHLERT, D. L'autotomie et les amputations spontanées. *Rev. Sci.* **xxxviii**, 1886, p. 701.
- ORTMANN, A. Japanische Cephalopoden. *Zool. Jahrb. Syst.* **iii**, pp. 639-670, pls. **xx-xxv**.
- OSBORN, H. L. On the early history of the foot in prosobranch gasteropods. *P. Am. Ass.* **xxxvi**, pp. 263 & 264. [*Cf. Zool. Rec.* **xxiv**, *Moll.* p. 20.]

- P——. La fonction urinaire chez les mollusques acéphales. *Le Nat.* x, pp. 78 & 79. [Abstr. of LETELLIER.]
- PAETEL, F. Catalog der Conchylien-Sammlung von ——. VII, VIII, pp. 481-639. Berlin: 1888, 8vo.
- PELSENEER, P. (1) Report on the *Pteropoda* collected by H.M.S. Challenger, during the years 1873-76. Part II.—The *Thecosomata*. Reports on the Scientific Results of the Voyage of H.M.S. Challenger, during the years 1873-76, vol. xxiii, pt. lxx, 132 pp., 2 pls., 3 cuts. London, Edinburgh, & Dublin: 1888, 4to.
- . (2) Report on the *Pteropoda* collected by H.M.S. Challenger, during the years 1873-76. Part III.—Anatomy. *T. c.* part lxxvi, 97 pp., 5 pls., 5 cuts; abstr., *Am. Nat.* xxii, p. 841.
- . (3) Report on the Anatomy of the Deep-Sea *Mollusca* collected by H.M.S. Challenger, in the years 1873-76. Reports on the Scientific Results of the Voyage of H.M.S. Challenger, during the years 1873-76, vol. xxvii, part lxxiv, 42 pp., 4 pls. London, Edinburgh, & Dublin: 1888, 4to; abstr., *J. R. Micr. Soc.* 1889, p. 369.
- . (4) Sur la valeur morphologique des bras et la composition du système nerveux central des Céphalopodes. *Arch. Biol.* viii, pp. 723-756, pls. xxxvii & xxxviii, 5 cuts.
- . (5) Gibt es Orthoneuren? *Bull. Sci. Fr. Belg.* (3) i, pp. 46-52, 4 cuts.
- . (6) Sur la valeur morphologique de l'épipedium des Gastropodes rhépidoglosses (*Streptoneura aspidobranchia*). *T. c.* pp. 107-109.
- . (7) Sur l'Épipedium des Mollusques. *T. c.* pp. 182-200, pl. xv, 4 cuts.
- . (8) Sur la classification des Gastropodes d'après le système nerveux. *T. c.* pp. 293-295.
- . (9) Sur le genre *Peracle*. *Bull. Soc. mal. Belg.* 1887, pp. cxii-cxiv; also *P.-v. Soc. mal. Belg.* xvi, pp. cxxxvi-cxxxviii.
- . (10) Sur la classification des Gastropodes d'après le système nerveux. *P.-v. Soc. mal. Belg.* xvii, pp. xlviii-li.
- . (11) Sur la classification des Gastropodes d'après le système nerveux. *Bull. Soc. Z. Fr.* xiii, pp. 113-115; abstr., *J. R. Micr. Soc.* 1888, p. 933.
- . (12) Les Pélécypodes (ou Lamellibranches) sans branchies. *C.R.* cvi, pp. 1029-1031; abstr., *J. R. Micr. Soc.* 1888, p. 564. [Prelim. notice of (3) *partim*.]
- . See also HALLER.
- PERRIER, R. (1) Sur le rein des Gastéropodes prosobranches monotocardes. *C.R.* cvi, pp. 766-768; abstr., *J. R. Micr. Soc.* 1888, pp. 399 & 400; *CB. Physiol.* ii, p. 100.
- . (2) Sur l'histologie comparée de l'épithélium glandulaire du rein des Gastéropodes prosobranches. *Op. cit.* cvii, pp. 188-191.
- . (3) Sur un organe nouveau des prosobranches. *C.R. Soc. Biol.* (8) v, pp. 569-571.

- †PETERSEN, C. G. J. Om de skalbærende Molluskers Udbredningsforhold i de danske Have indenfor Skagen. Inaug.-Diss., Copenhagen: 1888, 8vo, 162 pp., 2 maps; abstr., Nachr. mal. Ges. xx, p. 127.
- PETIT, L. Sur les mouvements de rotation provoqués par la lésion des ganglions sus-œsophagiens chez les escargots. C.R. cvi, pp. 1809-1811; abstr., J. R. Micr. Soc. 1888, pp. 717 & 718; CB. Physiol. ii, pp. 402 & 403.
- PETTERD, W. F. (1) Contributions for a Systematic Catalogue of the Aquatic Shells of Tasmania. Part I. P. R. Soc. Tasm., 1887; also separately, Hobart Town: 8vo, 24 pp. 3 pls.
- . (2) Descriptions of two New Species of Tasmanian Fresh-Water Shells. T. c. pp. 40 & 41, pl. xlv.
- PFEFFER, G. Bericht über die wissenschaftlichen Leistungen im Gebiete der Malakologie während des Jahres 1885. Arch. f. Nat. lii (2), 1886, pp. 1-96 [issued 1888].
- PIDGEON, D. A Shell Collector's Difficulty. Nature, xxxviii, p. 590.
- PIDGEON, W. R. A Mussel living in the branchiæ of a Crab. Nature, xxxix, pp. 127 & 128.
- PILSBRY, H. A. (1) Manual of Conchology; Structural and Systematic. x, pp. 161-323, *Phasianellinæ*, *Turbinidæ*, *Delphinulinæ*. Philadelphia: 1888, 8vo. [Cf. TRYON, *postea*.]
- . (2) Manual of Conchology; Structural and Systematic. Second Series. *Pulmonata*. iv. *Helicidæ*, vol. ii, pp. 120-296.
- . (3) *Lyogyrus*, Gill, and other American Shells. Conch. Exch. ii, p. 113.
- . (4) On the Helicoid Land Molluscs of Bermuda. P. Ac. Philad. 1888, pp. 285-291, pl. xvii.
- PLATE, L. Bemerkungen zur Organisation der Dentalien. Zool. Anz. xi, pp. 509-515; abstr., J. R. Micr. Soc. 1888, pp. 933-935.
- POIRIER, J. Étude anatomique de l'*Estria alluaudi*, nouvelle espèce de Limacien africain. Mém. Soc. Philom. Cent. pp. 135°-153°, pls. xiii & xiv. Paris: 1888, 4to.
- POLLONERA, C. (1) Nuove specie di molluschi terrestri raccolti nello Scioa. Boll. Mus. Zool. Comp. Anat. Torino, iii, No. 37, 4 pp.
- . (2) Appunti di Malacologica. I. Di alcune Testacelle raccolte presso Torino. II. Di alcune Testacelle spagnole. III. Un nuovo Limacide dell' Asia Minore. T. c. No. 43, 10 pp., 1 pl.
- . (3) Appunti di Malacologica. iv. Intorno ad alcuni *Limaz italiani*. Op. cit. No. 51, 4 pp., 1 pl.
- . (4) Esame critico delle specie terrestri descritte come nuove dall' Abate G. Olivi. Bull. Soc. mal. Ital. xiii, pp. 9-16.
- . (5) Molluschi dello Scioa e della valle dell' Havash. T. c. pp. 49-86, pls. ii & iii.

[POLLONERA, C.] (6) Molluschi fossili post-pliocenici del contorno di Torino. Mem. Acc. Tor. (2) xxxviii, pp. 25-56, pl.

*POTONIE, —. [*Helix pomatia* in North Germany.] Naturwissenschaftliche Wochenschrift, iii (3) 14 Oct., 1888. [Referred to, SB. nat. Fr. 1888, p. 149.]

PRENANT, A. Observations cytologiques sur les éléments séminaux des Gastéropodes pulmonés. Cellule, iv, pp. 137-177, 2 pls. ; abstr., J. R. Micr. Soc. 1888, p. 932, prelim. notice, Bull. Soc. Nancy (2) ix, pp. xxxiii & xxxiv.

PRETE, R. DEL. Strumenti utili per i collezionisti Conchiliologi. Boll. Nat. viii, pp. 24 & 25.

QUILTER, H. E. (1) Note on a parasitic mite of *Testacella scutulum*. J. of Conch. v, p. 314.

—. (2) Note on the occurrence of *Testacella scutulum* Sow. in Leicestershire. T. c. p. 320.

—. (3) Land and Fresh-water Mollusca collected in Leicestershire during 1885-86-87. Tr. Leicester Soc. pt. vii, pp. 17-21.

RAWITZ, B. (1) Die Fussdrüse der Opisthobranchier. Abh. Ak. Berl. 1887, 31 pp., 2 pls.

—. (2) Der Mantelrand der Acephalen. 1 Th. *Ostreacea*. Jen. Z. Nat. xxii, pp. 415-556, pls. xiii-xviii & cut ; also separately, Jena : 1888, 8vo, 142 pp. ; abstr., R. Micr. Soc. 1889, pp. 198-201.

—. (3) [Mucous Cells in Invertebrates.] Nature, xxxvii, p. 168 ; abstr., J. R. Micr. Soc. 1888, p. 402.

REICHEL, L. Ueber die Bildung des Byssus der Lamellibranchiaten. Zool. Beitr. ii, pp. 107-132, pl. xii ; abstr., J. R. Micr. Soc. 1888, p. 935. [Cf. Zool. Rec. xxiv, *Moll.* pp. 22 & 36.]

REINHARDT. *Helix (Campyloea) angulata* Stud. vom Staffelberge in Oberfranken. SB. nat. Fr. 1888, p. 75.

RETOWSKY, O. Beiträge zur Molluskenfauna des Kaukasus. Bull. Mosc. 1888, pp. 277-288.

REULEAUX, C. Ueber interessante Funde auf deutschem Gebiete. II. Nachr. mal. Ges. xx, pp. 10-15.

RHO, F. Studii sullo sviluppo della *Chromodoris elegans*. Atti Acc. Napoli (2) i, App. 3, 7 pp., 2 pls.

RICHTERS, F. Die Tiefsee und ihr Leben. Zool. Gart. xxix, pp. 333-341, 4 cuts.

ROBERT, E. Sur la spermatogénèse chez les Aplysies. C.R. cvi, pp. 422-425 ; abstr., Rev. Sci. xli, pp. 218 & 219 ; J. R. Micr. Soc. 1888, pp. 397 & 398.

ROBERTS, G. (1) *Helix hortensis* and its Variation. Naturalist, 1888, p. 232. [Nothing new.]

—. (2) Reappearance of Canal Shells at Agbrigg near Wakefield. *Ibid.*

- [ROBERTS, G.] (3) *Limnæa palustris*, var. *albida*, Nelson. *Sphærium rivicola*, var. *flavescens*, Pascal. *Helix hortensis*. Sci. Goss. xxiv, p. 91.
- (4) Observations on the *Unionidæ*. *T. c.* pp. 127-129.
- (5) *Anodonta cygnea* and *anatina*. *T. c.* p. 280.
- ROBERTSON, D. Jottings from my Note-Book. *Purpura lapillus*, Lin., *Mytilus edulis*, Lin. On some Marine *Mollusca*. P. N. H. Soc. Glasg. ii, pp. 139-153.
- ROCHEBRUNE, A. T. DE. (1). Diagnoses d'espèces nouvelles pour la faune de l'archipel du Cap Vert. Bull. Soc. Philom. (7) vi, 1882, pp. 24-32. [*Mollusca*, pp. 26-31.]
- (2) Sur quelques espèces du Haut-Sénégal. *T. c.* pp. 33-35.
- (3) Documents sur la faune malacologique de la Cochinchine et du Cambodge. *T. c.* pp. 35-74, pl. i. Supplément aux documents sur la faune malacologique de la Cochinchine et du Cambodge. *T. c.* pp. 99-118.
- (4) Diagnose d'espèces nouvelles de la famille des *Chitonidæ*. (Premier supplément.) *T. c.* pp. 190-197.
- ROEBUCK, W. D. *Arion ater*, var. nov. *cinerea* at Nottingham. Naturalist, 1888, p. 284.
- ROEBUCK, W. D., & CLARKE, W. E. Bibliography : Papers and records published with respect to the Natural History and Physical Features of the North of England. *Mollusca*, 1886 and 1887. *T. c.* pp. 247-263.
- ROGERS, T. *Planorbis dilatatus*, Gould, in England. Conch. Exch. i, p. 63. [Nothing new.]
- ROLLESTON, G. Forms of Animal Life. A Manual of Comparative Anatomy with Descriptions of Selected Types. Second edition revised and enlarged by W. HATCHETT JACKSON. Oxford : 1888, 8vo, xxxii & 937 pp., 14 pls., cuts. [*Mollusca*, pp. 107-138, & 448-499.]
- ROULE, L. (1) Recherches histologiques sur le système circulatoire des Lamellibranches. Bull. Soc. Toulouse, xxi, 1887, pp. lv & lvi (unfinished). [*Cf. Zool. Rec.* xxiii, *Moll.* pp. 23 & 32.]
- (2) Sur la structure des fibres musculaires appartenant aux muscles rétracteurs des valves des Mollusques lamellibranches. C.R. cvi, pp. 872-874; abstr., J. R. Micr. Soc. 1888, p. 402; C.B. Physiol. ii. p. 175.
- RZEHA, A. Die pleistocäne Conchylienfauna Mährens. Verh. Ver. Brünn. (Abh.) xxvi, 1887, pp. 73-104.
- SABATIER, A. Sur les formes de spermatozoïdes de l'Élédone musquée. C.R. cvi, pp. 954-956; abstr., J. R. Micr. Soc. 1888, p. 560.
- SAINT-LOUP, R. Observations anatomiques sur les Aplysies. *Op. cit.* cvii, pp. 1010-1012; abstr., J. R. Micr. Soc. 1889, pp. 195 & 196.
- +SALVAÑÁ, J. M. (1) Estudio di M. Pablo Fagot sobre los Helices Xerofilianos del grupo Barcinonensiana. Barcelona : 1886; abstr., Mal. Bl. x, p. 89.

[SALVAÑA, J. M.] (2) Contribución á la Fauna malacológica de los Pirineos catalanes ó sea Descripción de la Comarca de Olot en relación con la Fauna malacológica local [pt. i], y Monografía de los Moluscos terrestres y fluviátiles de aquel territorio [pt. ii]. An. Soc. Esp. xvii, pp. 75-132.

— (3) Crítica de los moluscos testáceos en general en el concepto de especies y hechos que demuestran la inconsistencia de algunos caracteres de las conchas bajo la influencia de ciertos agentes naturales y artificiales. [Pt. iii of Contrib. Fauna Malac. Pirineos. See above.]

SANDER, Č. Oněkterých nových a vzácnějších pro Čechy druhích měkkýšů. [On certain Bohemian Molluscs.] SB. bōhm. Ges. 1887, pp. 132-140, pl. [German abstr., t. c. pp. 140-143.]

SAUNDERS, J. Conchological Notes from South Beds. Midl. Nat. pp. 152-154.

SAYN, G. Catalogue des mollusques terrestres et fluviatiles du département de la Drome. Bull. Soc. mal. Fr. v, pp. 121-184.

SCHÄFF, —. Vorlage eines Wasserläufers (*Totanus calidris*), welcher an einem Bein von einer grossen *Anodonta* festgehalten wird. SB. nat. Fr. 1888, pp. 121 & 122.

SCHARDT, —. Coquilles de trois *Unio batavus* trouvés vivant dans le lac Léman. Arch. Sci. Nat. (3) xviii, p. 220.

SCHEPMAN, M. M. (1) Zoological Researches in Liberia. List of *Mollusca*, with descriptions of new species. Notes Leyd. Mus. x, pp. 245-252, pl. x.

— (2) En nieuwe *Paludina* van Borneo. Tijdschr. Nederl. Dierk. Ver. (2) ii, pp. 143 & 144, woodcut; abstr., Nachr. mal. Ges. xx, p. 121.

SCHIEMENZ, P. Die Entwicklung der Genitalorgane bei den Gastropoden. Biol. Centralbl. vii, pp. 748-761.

SCHIEERHOLZ, C. Ueber Entwicklung der Unioniden. Denk. Ak. Wien, lv, pp. 183-214, pls. i-iv; also separately, Vienna: 1888, 4to; abstr., Anz. Ak. Wien, 1888, xxv, pp. 126 & 127.

SCHIMKEWITSCH, W. Sur le développement du cœur des Mollusques Pulmonés d'après les observations de M. Schalfew. Zool. Anz. xi, pp. 65 & 66; abstr., J. R. Micr. Soc. 1888, pp. 204 & 205.

SCHRÖDER, H. (1) Pseudoseptale Bildungen in den Kammern fossiler Cephalopoden. JB. k. preuss. geol. Landesanst. 1887 (1888), pp. 164-230, pls. vi-viii.

— (2) Ueber der Bourguignat'sche Methode der Messung der Acephalen. Schr. Ver. Harzes, iii, pp. 11-18.

— (3) Schnecken an Nadelhölzern. T. c. pp. 18 & 19.

SCOTT, T. (1) Notes on some Species of Land and Fresh-water *Mollusca* and Land *Isopoda* from Bute. P. N. H. Soc. Glasg. ii, pp. 125-127.

— (2) Remarks on some Land and Fresh-water *Mollusca* from Tarbert, Loch Fyne. T. c. pp. 129-132.

- [SCOTT, T.] (3) Notes on the Contents of the Stomachs of Herring and Haddocks. Rep. Fish. Scotl. vi, part iii, pp. 225-231.
- SEGRAVE, E. S. Report on the Oyster Fisheries of Maryland. Foreign Office, Misc. series, No. 8, Reports on Subjects of general and commercial interest. United States. London: 1888, 8vo, 7 pp.
- SEIDENSTICKER, F. J. The Nidus of *Lunatia-heros*. Tr. Meriden Sci. Assoc. iii, pp. 31-34, cuts.
- SERVAIN, G. (1) Catalogue des coquilles marines recueillies à Concarneau et dans la Baie de la Forest (Finistère). Lyon: 1888, 8vo, 129 pp.
- . (2) Aperçu sur la faune des Mollusques fluviatiles des environs de Hambourg. Bull. Soc. mal. Fr. v, pp. 287-340, pla. viii & ix.
- SHALFEEV', P. P. O razvitií *Limax agrestis* v yaítzye [On the development of *Limax agrestis* in the egg]. Trudui St. Petersburg Nat. Zool. xix, Protok. pp. 86-88.
- SHARP, B. Remarks on the Phylogeny of the *Lamellibranchiata*. P. Ac. Philad. 1888, pp. 121-124; see also Ann. N. H. (6) ii, pp. 125-128.
- SHIMEK, B. *Margaritana hildrethiana* (Lea). Conch. Exch. ii, p. 114.
- SIMPSON, C. T. (1) Record of a Two Days' Dredging Cruise in Tampa Bay, Florida. Op. cit. i, pp. 44, 52, & 53.
- . (2) *Succinea lineata*, W. G. B., in Nebraska. T. c. p. 65.
- . (3) New Localities. T. c. p. 65.
- . (4) On the Distribution of Land and Fresh-water Shells in the Tropics. Op. cit. ii, pp. 37, 38, 50, & 51.
- . (5) On a New Floridian *Natica*. *Natica fordiana*, n. s. T. c. pp. 51 & 52.
- . (6) Shell Collecting. T. c. pp. 52 & 53. [Nothing new.]
- . (7) The Dredge. T. c. pp. 83 & 84. [Nothing new.]
- . (8) *Gundlachia Ancyliiformis*, Pfr., in Florida. T. c. p. 96.
- . (9) Notes on some Indian Territory Land and Fresh-water Shells. P. U. S. Nat. Mus. 1888, pp. 449-454.
- SIMROTH, H. (1) Ueber einige Themata aus der Malakologie. I. Ueber die Vitrinen. SB. Ges. Leipzig, xiii, xiv, pp. 40-45.
- . (2) Ueber einige Themata aus der Malakologie. II. Ueber Mimicry nach Lungenschnecken. T. c. p. 45.
- . (3) Ueber einige Themata aus der Malakologie. III. Ueber afrikanische Nacktschnecken. T. c. pp. 45-48.
- . (4) Ueber einige Themata aus der Malakologie. IV. Ueber das Alter und die Verwandtschaft der Lungenschnecken. Op. cit. xiii, xiv, pp. 48-50.
- . (5) Ueber die azorisch-portugiesische Nacktschneckenfauna und ihre Beziehung. Zool. Anz. xi, pp. 66-70 & 86-90.

- [SIMROTH, H.] (6) Ueber die geologische und geographische Verbreitung der Pulmonaten, insbesondere der Nacktschnecken. Leipzig: Inaug. Diss., Halle a-S. ; 1888, 8vo, 36 pp.
- SMITH, A. Occurrence of Dead Shells of *Crepidula fornicata* on Grimsby Beach. *Naturalist*, 1888, p. 275.
- SMITH, E. A. (1) Report on the *Heteropoda* collected by H.M.S. Challenger, during the years 1873-76. Scientific Results of the Voyage of H.M.S. Challenger, during the years 1873-76, vol. xxiii, part lxxii, 51 pp., 5 cuts.
- (2) Notice of an Abnormal Growth in a Species of *Haliotis*. *Ann. N. H.* (6) i, pp. 419-421; abstr., *J. R. Micr. Soc.* 1888, p. 56.
- (3) On the *Mollusca* collected by Mr. G. A. Ramage at the Island of Dominica. *Ann. N. H.* (6) ii, pp. 227-234, 419, & 420.
- (4) Diagnoses of new Species of *Pleurotomidae* in the British Museum. *T. c.* pp. 300-317.
- (5) Description de quelques espèces de Coquilles terrestres de Sumatra, Java et Bornéo. *Ann. Soc. Mal. Belg.* xxii, pp. 215-222, pl. ix.
- (6) Note sur le *Cypræa bregeriana*, Crosse. *J. de Conch.* xxviii, pp. 313-316.
- (7) Notice of a Monstrosity of *Bythinia tentaculata*. *J. of Conch.* v, pp. 315 & 316, pl. ii, fig. 27.
- (8) Catalog der Gattung *Chilina*. *Nachr. mal. Ges.* xx, pp. 44-46. [Reprint from *P. Z. S.* 1881, p. 842.]
- (9) Note on three species of Shells from the Rio del Rey, Cameroons. *P. Z. S.* 1887, pp. 566 & 567.
- (10) On the Shells of the Albert Nyanza, Central Africa, obtained by Dr. Emin Pascha. *Op. cit.* 1888, pp. 52-56, 3 cuts.
- SOMERVILLE, A. (1) *Trophon truncatus* (Ström.), var. *scalaris*, Jeffr. on the West of Scotland. *J. of Conch.* v, pp. 319 & 320.
- (2) *Lacuna pallida*, Da Costa. *Sci. Goss.* xxiv, p. 91.
- SOPPITT, H. T., & CARTER, J. W. Land and Fresh-water *Mollusca* of Upper Airedale, Yorkshire. *Naturalist*, 1888, pp. 91-102.
- SOWERBY, G. B. (1) Descriptions of sixteen new species of Shells. *P. Z. S.* 1888, pp. 207-213, pl. xi.
- (2) Description of a Gigantic new Species of *Aspergillum*. *T. c.* p. 290.
- STAHL, E. Pflanzen und Schnecken. Eine biologische Studie über die Schutzmittel der Pflanzen gegen Schneckenfrass. *Jen. Z. Nat.* xxii, pp. 557-684; also separately, Jena: 1888, 8vo, 126 pp.
- STEENSTRUP, J. J. S. Notæ Teuthologicae, 8. Overs. Dan. Selsk., 1887, pp. 127-145, 2 pls., cut.

- STEFANI, C. DE. Molluschi viventi nelle Alpi apuane, nel monte Pisano e nell' Apennino adiacente. Bull. Soc. mal. Ital. v, pl. ix. [Text published, 1883.]
- STEINER, —. Ueber die Physiologie des Nervensystems einiger wirbellosen Thiere. Biol. Centrabl. vii, pp. 732 & 733; abstr., J. R. Micr. Soc. 1888, p. 559. [Cf. Zool. Rec. xxiv, Moll. pp. 26, 37, & 38.]
- STERKI, V. (1) Collecting Shells in Drift. Conch. Exch. i, p. 45. [Nothing new.]
- . (2) [*Pupæ* from Ohio]. T. c. p. 54.
- . (3) How to collect small Land Shells. T. c. pp. 67 & 68.
- . (4) A Study of the American Species of *Vertigo* contained in the U. S. National Museum, with the Description of a new subgenus of *Pupidæ*. P. U. S. Nat. Mus. 1888, pp. 369-380, pl. xlii.
- STRICKER, W. Zur Geschichte der Mollusken. Zool. Gart. xxix, pp. 329-333.
- STUHLMANN, F. Vorläufiger Bericht über eine mit Unterstützung der Königlichen Akademie der Wissenschaften unternommene Reise nach Ost-Africa, zur Untersuchung der Süßwasserfauna. SB. Ak. Berlin, 1888, pp. 1255-1269.
- SUCHETET, A. L'hybridité dans la nature. Rev. Quest. Sci. xxiv, pp. 175-244. [Mollusca, pp. 178-180.]
- SULLIOTTI, G. R. Osservazioni intorno ai Generi *Heliconoides*, D'Orb. e *Thapsia*, Monts. Boll. Nat. viii, pp. 66 & 67.
- TAPPARONE-CANEFRI, C. Fauna malacologica della Nuova Guinea e delle isole adiacenti. Parte I. Molluschi estramarini. Supplemento 1, Ann. Mus. Genov. xxiv, pp. 129-200, pls. i & ii.
- TAYLOR, J. W. (1) On the Variation of British Land and Freshwater Mollusca. J. of Conch. v, pp. 289-304.
- . (2) *Helix pisana* var. *minor* Bourg. T. c. p. 331.
- . (3) *Unio pictorum* var. *latior* Jeffr. in Lancashire. Ibid.
- . (4) Discovery of *Helix harpa* Say in Switzerland. T. c. p. 335.
- . (5) On the Specific Distinctness and the Geographical Distribution of *Testucella scutulum* G. B. Sowerby. T. c. pp. 337-347.
- . (6) Note on *Vertigo tumida* West. T. c. p. 357.
- . (7) *P. marginata* var. *albina* Menke. T. c. p. 360.
- . (8) *Amalia gagates* in Cardiganshire. Ibid.
- TAYLOR, J. W., & ROEBUCK, W. D. Authenticated Materials towards a Land and Freshwater Molluscan Fauna of Ireland. P. R. Irish Ac. (2) iv, pp. 672-692.
- & ——. [See WILLIAMS, J. W. (2).]

- TENISON-WOODS, J. E. (1) On the Anatomy and Life History of *Mollusca* peculiar to Australia. J. R. Soc. N.S.W. xxii, pp. 106-187, pls. iii-xiv.
- (2) Malaysian Land and Fresh-water *Mollusca*. P. Linn. Soc. N.S.W. (2) iii. pp. 1003-1095, pls. xxvii-xxx.
- THOMAS, P. Sur une forme ancestrale de *PIHelix* (*Leucochroa*) *candidissima*, Draparnaud. Bull. Soc. Nancy (2) ix, pp. 80-88, pl.
- TOMLIN, J. R. B. (1) *H. arbustorum*, *M. sinistrorsum*. Sci. Goss. xxiv, p. 20.
- (2) *Odostomias* at Herm. T. c. p. 38.
- (3) "*Achatina octona*." T. c. p. 188. [Nothing new.]
- (4) *H. virgata* var. *alba*. T. c. p. 279.
- TOURNEUX, F., & BARROIS, T. Sur l'existence des fibres musculaires striées dans le muscle adducteur des valves chez les pectinidés, et sur les mouvements natatoires qu'engendre leur contraction. C.R. Soc. Biol. (8) v, pp. 181-188; abstr., CB. Physiol. ii, p. 118.
- °TRINCHESE, —. Descrizione del nuovo genere *Caloria*, Tr. Mem. Acc. Bologna (4) ix, pp. 87-94, 1 pl.; also separately, Bologna: 1888, 4to, 7 pp., pl.
- TRYON, G. W. (1) Manual of Conchology; Structural and Systematic. x. *Neritidæ*, *Adeorbidæ*, *Cyclostrematidæ*, *Liotidæ*, pp. 1-160, by GEO. W. TRYON. *Phasianellinæ*, *Turbinidæ*, *Delphinulinæ*, pp. 161-323, by HENRY A. PILSBRY. Pt. xxxvii, pp. 1-64, pls. i-xii; pt. xxxviii, pp. 65-144, pls. xiii-xxx; pt. xxxix, pp. 145-208, pls. xxxi-xlv; pt. xl, pp. 209-323, pls. xlvi-lxix. Philadelphia: 1888, 8vo.
- (2) Manual of Conchology; Structural and Systematic. Second series, *Pulmonata*, iv, *Helicidæ*, vol. ii, pp. 1-120, by G. W. TRYON; pp. 120-296, by H. A. PILSBRY. Pt. xiii, pp. 1-64, pls. i-xvi; pt. xiv, pp. 65-128, pls. xvii-xxxii; pt. xv, pp. 129-192, pls. xxxiii-xliv; pt. xvi, pp. 193-296, pls. xlv-lxix.
- TRYON, H. Errata contained in a list of Land Shells recorded from Queensland. P. R. Soc. Queensl. v, pp. 131-137.
- ULIČNÝ, J. (1) *Hyalina inopinata*, n. sp. Mal. Bl. x, pp. 112-114.
- (2) Ueber die Mundwerkzeuge von *Ancylus fluviatilis* und *Velletia lucustris*. Verh. Ver. Brünn, xxvi, pp. 120-123, pl. i; abstr., J. R. Micr. Soc. 1889, p. 197.
- VARIGNY, H. DE. Beitrag zum Studium des Einflusses des süßsen Wassers auf die Seethiere. CB. Phys. i, pp. 566-568.
- VAYSSIÈRE, A. (1) Atlas d'anatomie comparée des invertébrés. Fasc. 2 & 3. Paris: 1888, fol., 30 pls., with explanations. [*Mollusca*, pl. xv.]
- (2) Sur la position systématique du genre Héro. CR. cvii, pp. 136-138; transl., Ann. N. H. (6) ii, pp. 196 & 197.
- (3) Description de la *Facelina marioni* et de la *Coryphella berghii*. J. de Conch. xxviii, pp. 125-131, pl. vii.

- VIALLETON, L. Recherches sur les premières phases du développement de la Seiche (*Sepia officinalis*). Ann. Sci. Nat. (7) vi, pp. 165-280, pls. vii-xiv; also separately; Paris: 1888, 8vo; abstr., Arch. Z. expér. (2) vi, pp. ix-xiii; J. R. Micr. Soc. 1889, pp. 370 & 371.
- VIGNON, CAP. Catalogue des Mollusques terrestres et fluviatiles récoltés sur la côte occidentale d'Afrique. Bull. Soc. mal. Fr. v, pp. 65-76.
- VINCENT, G. Découverte de *Cyrena fluminalis*, Mull., dans les alluvions de l'Escant. P.-v. Soc. mal. Belg. xvii, pp. xxxix & xl.
- VOGT, C., & YUNG, E. Lehrbuch der praktischen vergleichenden Anatomie. XIII & XIV. Brunswick: 1888, 8vo, pp. viii & 769-907. [Vol. i completed; also published in French.]
- VOIGT, W. (1) *Entocolax ludwigii*, ein neuer seltsamer Parasit aus einer Holothurie. Z. wiss. Zool. xlvii, pp. 658-688, pls. xli-xliii; abstr., J. R. Micr. Soc. 1889, p. 197.
- . (2) Ueber parasitische Schnecken und *Entocolax ludwigii*, n. g., n. sp. SB. niederrhein. Ges. 1888, pp. 53-55.
- VVEDENSKII, N. E. O vliyanií nervnoi sistemy na dvizhenie mert-zatel'nago épitliya u *Anodonta*. [On the influence of the nervous system on the ciliary movement in *Anodonta*.] Trudui St. Petersburg Nat., Zool. xix, Protok. p. 112.
- WALKER, B. On the Re-discovery of *Planorbis multivolvis* Case, and *Planorbis truncatus* Miles. J. of Conch. v, pp. 330 & 331.
- WATASE, S. (1) Homology of the Germinal Layers of Cephalopods. J. Hopk. Univ. Circ. vii, pp. 33 & 34, 3 cuts; abstr., J. R. Micr. Soc. 1888, pp. 396 & 397; Am. Nat. xxii, p. 256. [Prelim. notice of (2).]
- . (2) Observations on the Development of Cephalopods: Homology of the Germ Layers. Stud. Biol. Lab. J. Hopkins Univ. iv. pp. 163-183, pls. xvi & xvii; abstr., J. R. Micr. Soc. 1888, p. 931.
- WEBB, W. M. *Anodonta cygnea*, Linné. Sci. Goss. xxiv, pp. 235 & 236.
- WEBER, M. Pearls and Pearl Fisheries. Zool. (3) xii, pp. 50-58. [Cf. Zool. Rec. xxiv, Moll. p. 28.]
- WEBSTER, C. L. Notes on the Geology of Johnson County, Iowa. Am. Nat. xxii, pp. 408-419. [Mollusca, p. 419.]
- WEISS, F. E. On Some Oigopsid Cuttle Fishes. Q. J. Micr. Sci. xxix, pp. 75-96, pls. viii-x; abstr., J. R. Micr. Soc. 1888, pp. 931 & 932.
- WESTERLUND, C. A. Species et varietates nonnullas minus cognitatas vel novas. Bull. Soc. mal. Fr. v, pp. 55-64.
- WESTGATE, W. W. (1) Notes on *Teredo*. Conch. Exch. ii, p. 84.
- . (2) Distribution of Shells. T. c. p. 98. [Nothing new.]
- WILDMAN, J. R. (1) *H. nemoralis* var. *scaliforme*. Sci. Goss. xxiv, p. 209.
- . (2) *Planorbis dilatatus*. Ibid. [Nothing new.]

WILLEM, V. Note sur le procédé employé par les Gastéropodes d'eau douce pour glisser à la surface du liquide. Bull. Ac. Belg. lvii, pp. 421-430, 1 pl.; abstr., J. R. Micr. Soc. 1888, p. 718.

WILLIAMS, J. W. (1) The Shell Collector's Handbook for the Field. London: 1888, 12mo, 148 pp.

— (2) Land and Fresh-water Shells: an Introduction to the Study of Conchology . . . with a chapter on the Distribution of the British Land- and Fresh-water *Mollusca*, by J. W. Taylor & W. Denison Roebuck. London: 1889, 8vo, 112 pp. [issued 1888].

— (3) *Vertigo minutissima* (Hartm.) in Gloucestershire. J. of Conch. v, p. 357.

— (4) The Red Fluid emitted by *Planorbis corneus*. T. c. p. 363.

— (5) On the Morphology of the Gonads in *Limnæa stagnalis* (L.), and *L. peregra* (Müll.). T. c. pp. 364-369.

— (6) *Limnæa auricularia* floating. T. c. p. 369.

— (7) Geographical Distribution. Sci. Goss. xxiv, p. 115. [Remark on COCKERELL, T. D. A. (7).]

— (8) On Collecting and Preserving Land and Fresh-water Shells. Wesley Nat. i, pp. 354-356.

— (9) Land and Fresh-water Shells. *Op. cit.* ii, pp. 16-18, 76-79, & 109-112. [Nothing new.]

WILLIAMS, W. M. The Muzzling of Oysters. Nature, xxxvii, p. 585.

WINKLEY, W. H. *Mollusca* found in the Oyster Beds of Cocagne, N. B., Bedeque, and Summerside, P. E. I. Bull. Nat. Hist. Soc. New Brunswick, No. 7, pp. 69-71.

WOODWARD, B. B. Note on the pleistocene land and fresh-water *Mollusca* from the Harnwall Gravels. Proc. Geol. Assoc. x, pp. 355-360.

WORTON, F. W. The Land and Fresh-water Shells of Cardiff. Cardiff Nat. Soc. xx, pp. 32-39, pl.

WRIGHT, B. H. (1) Check List of North American *Unionidæ* and other Fresh Water Bivalves. Portland, Oregon: 1888, 8vo, 8 pp.

— (2) Descriptions of new species of *Uniones* from Florida. P. Ac. Philad. 1888, pp. 113-120, pls. ii-vi.

WRIGHT, S. H. A New Unio [*U. orcuttii*]. West Amer. Sci. 1888, p. 60, pl.

WRIGHT, S. H. & B. H. Notes upon the *Unionidæ* of Southern Florida. Conch. Exch. ii, pp. 67, 95, 111, & 112.

YUNG, E. Contributions à l'histoire physiologique de l'Escargot (*Helix pomatia*). Mém. Cour. 4to, xlix, 119 pp., 1 pl. [Published separately, 1886.]

— See also VOGT.

ZABRISKIE, J. L. The Radula of the Conch, *Lycotypus canaliculatus*, Gill. J. N. Y. Micr. Soc. iv, pp. 1-7.

ZACHARIAS, O. Zur Kenntniss der Fauna des Süßsen und Salzigen Sees bei Halle a/S. Z. wiss. Zool. xlv, pp. 217-232. [*Mollusca*, pp. 229-231.]

- ANON. (1) Abstract of KOBELT, W., "Prodrum Faunæ Testaceorum maria europæa inhabitantium." Bull. Soc. mal. Ital. xiii, pp. 32-42.
- (2) Cultivation of Oysters. Nature, xxxvii, p. 572. [Abstr. of SEGRAVE, *vide* p. 25, *supra*.]
- (3) Die Molluskenfauna der atlantischen Inseln. Naturforscher, xx, 1888, p. 449. [Nothing new.]
- (4) Die doppelten Spermatozoen bei Prosobranchiern. *Op. cit.* xxi, pp. 225 & 226. [Abstr. of BROCK, *cf.* Zool. Rec. xxiv, Moll. p. 4.]
- (5) Ueber riesenhafte Tintenfische. T. c. pp. 231-233; abstr., J. R. Micr. Soc. 1888, p. 930.

CONCHOLOGICAL JOURNALS, TEXT-BOOKS, &c.

Annales [et Bulletin] de la société royale malacologique de Belgique, vol. xxii (series 4, vol. ii), année 1887 (1888). Brussels: 8vo, 228 & clxxi pp., 11 pls. [Ann. Soc. mal. Belg.]

Bullettino della società malacologica Italiana. Vol. xiii, pp. 1-251, 10 pls. Pisa: 8vo.

Bulletins de la société malacologique de France, sous la direction de MM. C. F. ANCEY, &c., membres fondateurs, vol. v. Paris: 8vo, 449 pp., pls. i-vi, viii, ix. [Bull. Soc. mal. Fr.]

Conchologists' Exchange, The. A Publication Designed for Conchologists and Scientists generally. WM. D. AVERELL, Editor and Publisher. Vol. i, Nos. 7-11, pp. 33-72; vol. ii, Nos. 1-9, pp. 1-120. Philadelphia: 1887 & 1888, sm. 4to. [Conch. Exch.]

Jahrbücher der Deutschen Malakozoologischen Gesellschaft, by W. KOBELT, vol. xiv. Frankfort-on-the-Main: 8vo, pp. 306-383, pl. [Now discontinued.] [JB. mal. Ges.]

Journal de Conchyliologie, comprenant l'étude des Mollusques vivants et fossiles, publié sous la direction de H. CROSSE et P. FISCHER, vol. xxxvi (series 3, vol. xxviii). Paris: 8vo, 383 pp., pls. i-xiv. [J. de Conch.]

Journal of Conchology, established in 1874, as The Quarterly Journal of Conchology, vol. v, Nos. 9-12. Leeds & Berlin: 8vo, pp. 257-376, pls. ii & iii, and title of vol. v. [J. of Conch.]

Malakozoologische Blätter, by S. CLESSIN, new series, vol. x, pp. 65-183, pls. i-iv. Cassel & Berlin: 8vo. [Mal. Bl.]

Nachrichtsblatt der Deutschen Malakozoologischen Gesellschaft, by W. KOBELT, vol. xx. Frankfort-on-the-Main: 8vo, 184 pp. [Nachr. mal. Ges.]

Procès verbaux des Séances de la Société royale Malacologique, xvii, for 1888. Brussels: 8vo, pp. i-lxxii. [P.-v. Soc. mal. Belg.]

MARTINI & CHEMNITZ's Systematisches Conchylien-Cabinet, edited by W. KOBELT, has completed its 367th fascicule; for details, *vide* pp. 17 & 18 *antea*.

CLESSIN (1) has issued another part of his *Mollusca* of Austria and Switzerland.

Dr. NORMAN has issued a catalogue of the Marine *Mollusca* in his collection.

Sale Catalogue ; MACARÉ.

TRYON'S "Manual" is being continued by PILSBRY. A volume of each series has been issued.

PAETEL'S Catalogue is being continued, the first volume being now complete.

An abstract is given of a rare work on Conchology by DE LA PYLAIE ; FISCHER (4).

General text-book, treating of *Mollusca inter alia* ; ROLLESTON & JACKSON. See also VAYSSIÈRE ; GRABER (1).

A handy elementary text-book for the western part of the United States is issued by KEEP.

Biographies of most American conchologists ; DALL (5).

Notice of the writings of G. B. Adams ; CERMENATI.

Bibliographical notes ; MEYER.

ANATOMY AND PHYSIOLOGY.

In *Chiroteuthis veranyi* the funnel has a valve. There are olfactory organs ; there are two renal papillæ, but the renal sac is unpaired ; it has an anterior, but no dorsal division. Two viscero-pericardial apertures are present. The generative organs have two oviducts, and accessory nidamental glands. In *Doratopsis vermicularis* there are olfactory organs, behind the eye ; and "stellate" organs of unknown function in the thickened neck. The funnel has a valve. In many points the animal resembles *Chiroteuthis*. *Histioteuthis rüppelli* has no lachrymal sinus ; the neck has longitudinal ridges. The siphon has a valve. There are two renal papillæ, two oviducts, and nidamental glands. The genus has many resemblances to *Thysanoteuthis*. In *Verania* the olfactory organ is a small patch behind the eye ; WEISS.

The anatomy of the various genera of *Pteropoda* fully described : the rotation described by Boas in one group of the *Thecosomata* is maintained and supported by further arguments. *Peraclis* is regarded as the most archaic of this division. The *Thecosomata* have two, the *Gymnosomata* four cephalic tentacles. In the latter there is no mantle ; PELSENER (2). See also GROBBEN (2) ; IHERING.

The anatomy of the new genus, *Estria* [cf. Zool. Rec. xxiv, *Moll.* p. 56] is described in detail, with the result that it forms a transition from *Urocyclus*, in which the visceral cone extends the whole length of the foot, to *Helicarion*, where this has diminished, and *Parmarion* and *Mariella*, where it has entirely disappeared, the foot no longer presenting a cavity ; POIRIER.

The physiology of *Helix pomatia* has been examined, as to its hibernation ; its power of withstanding heat, cold, submersion, and poisons ; the functions of the various parts of the digestive tract and their secretions ; the effects of injury to different parts of the nervous system ; and the phenomena of circulation under varying conditions ; YUNG.

The minute structure of the mantle of *Scaphopoda* is described. The swellings outside the cerebral ganglia are independent ganglia with special commissures; they are the pleural ganglia of *Gastropoda*. There are two kinds of tentacles, true and rudimentary, whose structure is described. The lateral depressions on the oral cone are labial pouches, not salivary glands. There is no special efferent duct for the gonads. There are no true vessels. The affinities are with the *Gastropoda*, and they have not special phylogenetic relations to the *Cephalopoda*, the arms of which differ widely from their tentacles; PLATE.

Notes on various organs of *Testacella scutulum*; TAYLOR (5).

Ampullaria is said to have the following anatomical peculiarities, amongst others: (1) both a gill and a lung are present; (2) the gill, although displaced to the right, corresponds to the left gill of other *Pectinibranchs*; (3) the stomach has a pyloric cæcum; (4) the anterior aorta forms an enlargement in the pericardium; (5) the blood from the kidney passes directly to the auricle: *vide* pp. 36 & 37, *postea*; BOUVIER (5).

Anatomy of *Campeloma*; CALL (2).

The anatomy of *Concholepas* is exhaustively treated, and its position among the *Buccinidæ* maintained; *Monoceros*, *Purpura*, *Murex*, *Fusus*, and *Pyrula* are also discussed, but the memoir is too detailed for satisfactory abstraction here; HALLER.

Anatomy of *Entocolax ludwigii*; VOIGT [*cf.* p. 77, *postea*].

Anatomy of *Dondersia festiva*, n. g. & sp.; HUBRECHT [*cf.* p. 77, *postea*].

Notes on anatomy of African slugs; SIMROTH (3).

Notes on various parts of the anatomy of *Cyclosurus*, Morelet; FISCHER (5).

Anatomy of *Neocyclotus* described; FISCHER & CROSSE, pp. 150-159, pls. xliii & xlvii.

Anatomical notes on two *Nudibranchs*; VAYSSIÈRE (3).

Anatomy of many *Nudibranchs*; BERGH.

General sketch of the anatomy of *Valvata*; GARNAULT (4, 6), BERNARD (2).

Brief account of the anatomy of various species of *Proneomenia*; MARION & KOWALEWSKY.

Anatomy of the chief groups of *Mollusca* treated for students; VOIGT & YUNG.

1. Shell, Integument, and Connective Tissue.

The siphuncle of *Nautilus pompilius* is described as consisting of five distinct layers, and as having calcareous spicules embedded in its walls; BROOKS.

Cephalopod shells do not grow by intussusception. *Cephalopoda* divided on the basis of the shell into *Nautiloidea*, *Ammonoidea*, and *Coleoidea*; the last subdivided into *Ostrophora* and *Chondrophora*; BATHER (1).

Further observations on shell formation of *Nautilus*; BLAKE. Replies and criticisms on various points; BATHER (2).

It is only in full-grown shells that the last chambers decrease in size ; LENDENFELD.

Remarks on Barrande, "Réparation de la troncature normale ou périodique de la coquille" ; SCHRÖDER (1).

Shell of *Pupa candida* ; FISCHER (6).

Further observations on the structure of the Gastropod mantle are described ; additional details are given as to the false bipectinate gill of the *Monotocardia*. There is no trace of a gill in the branchial support of the *Diotocardia*. The sensory function of the false gill is admitted. All parts of the mantle seem capable of respiratory function ; BERNARD (1).

Some experiments on the effect of temperature on the chromatophores of *Octopus* ; KRUKENBERG (2).

The movements, due to ciliary action, of the Mussel and of its various organs have been investigated. The labial palps act as guards, not guides, to the mouth ; the food consists of diatoms, ova, and spores. Particles strained off by the gills do not reach the mouth ; M'ALPINE.

Nematocysts of *Coryphella* described ; VAYSSIÈRE (3).

The cartilage cells of *Cephalopoda* compared with those of certain morbid growths ; CARRIEU.

Myelocytes of various Molluscs described ; CHATIN.

External organs of *Mollusca* ; GRABER (2).

Connective tissue ; KRUKENBERG (3).

2. Muscular System.

Striated muscle fibres do not exist in any Mollusc ; where described they have been produced by reagents ; FOL (1).

Striation of muscles of certain *Pelecypoda*, e.g., *Pecten*, maintained by BLANCHARD (3, 4) ; the subject more fully discussed by TOURNEUX & BARROIS.

The muscles of a considerable number of *Pelecypoda* described, with figures ; BLANCHARD (2).

Fol's statements confirmed ; ROULE (2). Admission of the presence of striated muscle in *Pecten*, with criticisms on other parts of Blanchard's paper ; FOL (2).

In *Mollusca*, as elsewhere, rapid movement is correlated with striated muscles ; BLANCHARD (1).

Adductor muscles of *Mytilus* and *Ostrea* are very rich in nerves ; and there are also many ganglion cells, which may indicate the presence of automatic centres in the muscles. There seems no reason why each muscle-fibre should not have its own nerve ; GALEAZZI.

The condition of various *Pelecypods* in respect of their adductor muscles is described, and it is suggested the revolution of the axis is closely correlated with the reduction of the anterior, and the increase and final exclusive retention of the posterior ; JACKSON, R. T. (1).

Movements of the foot and of the contained fluid observed in young specimens of *Solen* ; MÖBIUS.

The muscular layers of the *Heteropoda* are described. The fin is found to be quite distinct from the trunk muscles, and the same is the case in

the *Pteropoda*. Fins of *Heteropoda* and *Pteropoda* are homologous, and have no connection with the foot. In *Gastropoda* and *Pelecypoda* the only differentiation in the ventral wall is the protopodium ; they have no deutopodium ; KALIDE (1).

Theoretical observations on the locomotion of *Pterotrachea* ; AMANS.

3. Digestive System.

The *Thecosomata* have a radula (formula 1 : 1 : 1), two lateral jaws, and two salivary glands. The stomach has a masticatory apparatus of four large plates, a small posterior one, and generally eight smaller anterior : an anal gland is present. In the *Gymnosomata* the anterior region forms a proboscis, there are buccal appendages carrying suckers or sensory organs, and evaginable sacs bearing hooks. The jaws unite ventrally in the middle line. The stomach is unarmed. PEISENER (2).

Jaws and radulae of *Ancylus* and *Velletia* described ; ULICNY (2).

Mounting radulae ; BEECHER.

Radula of *Lycotypus* ; ZABRISKIE : of *Chatoderma* ; HUBRECHT, p. 328.

Comparative anatomy of the salivary glands and some other organs of the *Stenoglossa* leads to the justification of grouping together the *Corallophilidae*, *Buccinidae*, and *Muricidae* ; BOUVIER (1).

The bulbar salivary glands of *Octopus* are represented in *Decapoda* by a median glandular aggregate embedded in the buccal mass. There is also a sublingual gland in all the forms examined. These both produce a coarsely granular secretion, the abdominal salivary glands a very fine ferment mixed with globules of mucus ; JOUBIN (2).

The salivary glands of *Sepia* and *Patella* seem to be similar in function to those of *Vertebrata* ; GRIFFITHS (1).

The stomach of *Valvata piscinalis* is very large, and extends into the spire ; BERNARD (2).

The crystalline style of *Mytilus edulis* disappears on starvation, and is supposed to be a reserve store of nutriment ; HASELOFF.

4. Circulatory System.

The blood-containing space of *Mollusca* and *Arthropoda* is not the homologue of the coelom of *Chatopoda* and *Vertebrata*, hence the distinctive name "hæmocæl" is proposed for it ; LANKESTER.

Theoretical discussion of various observations on the development of the Molluscan heart ; SCHIMKEWITSCH.

Anterior aorta in *Cyclostoma* has the usual course ; GARNAUT (8).

In *Aplysia* the arterial system is not closed, as stated by Kollmann. The circulation in the gill is described ; SAINT-LOUP.

Schiemenz's results corroborated ; blood and vascular sphincters are sufficient to account for the erection of the foot ; FLEISCHMANN.

Blood of *Tridacna* contains, in addition to amoeboid cells, rounded or oval bodies, whose protoplasm is full of refractive granules ; BROCK (2).

Fluid emitted by *Planorbis corneus* contains hæmoglobin ; WILLIAMS, J. W. (4).

5. Respiratory System.

In *Poromya*, *Silenia*, Smith (*nec auctt.*), and *Cuspidaria*, there is a muscular partition extending from one adductor to the other. This has been, hitherto, taken for the body-wall, but is formed by the modified gills. This arrangement is found carried out to a less extent in *Lyon-siella*. These constitute a special division (*Septibranchia*) of the *Pelecypoda* containing the families *Cuspidariidæ*, and *Poromyidæ*. The general morphology of Pelecypod gills is discussed, and a phylogenetic interpretation proposed; PELSENER (3).

Priority is claimed in respect of some of these observations, and corrections are made of others; DALL (2).

Ampullaria has both a lung and a gill; two kidneys are present, of different structure, also a pyloric cæcum; for peculiarities of genital organs, *vide* p. 37, *infra*; BOUVIER (5).

Experiments on the porosity of the septum of *Rumina decollata* and the shell of *Cyclostoma elegans*; FOLIN (1).

Ancylus fluviatilis possibly takes in minute bubbles of oxygen from the plants on which it feeds; GAIN.

6. Excretory and Secretory Systems.

An important account of the situation, occurrence and histology of the pericardial gland of *Pelecypoda* is given, from which the following conclusion is drawn. Numerous Pelecypods have a gland developed from the pericardial epithelium. It arises (A) above the auricles, (B) in the anterior angles of the pericardium: (A) occurs in *Arca*, *Pectunculus*, &c., becomes degenerate in the *Monomyaria*; (B) occurs in *Unio*, *Venus*, *Cardium*, &c., and *Dreissena*. In *Pholas* arrangements occur which are repeated in *Arca*, *Pectunculus*, and *Lithodomus*. The prominent frills of *Meleagrina* are peculiar. Concretions occur in some instances, which are probably evacuated through the kidneys. The function of the whole gland is excretory. A number of collateral conclusions are also enunciated; GROBBEN (1).

The organ of Bojanus of Pelecypods and its secretion have been minutely studied; the latter contains neither uric acid, urates, nor hippuric acid, but urea is present in it; LETELLIER.

In certain *Prosobranchiata* a portion of the kidney differs in structure from the rest, being in fact a closed diverticulum of the circulatory system; perhaps it is a blood-gland; PERRIER (3).

The renal secretory apparatus of *Littorina littorea* consists of a series of lamellæ, one edge of which hangs freely into the renal cavity. The glandular epithelium consists of two kinds of cells, glandular and ciliated. The excreted materials collect in a vacuole in the glandular cell, which falls out into the cavity when it reaches a certain size. The glandular tissue of the kidney does not extend to the pericardium; PERRIER (1). These observations confirmed and extended to different genera; *id.* (2).

In *Valvata piscinalis* the renal tube is simple above, but divides below into two secondary tubes; the right opens into the pericardium, and is provided with cilia; the left opens at the bottom of the pallial cavity. Only one kind of cells is present. The excretory products are got rid of either by extrusion or desquamation. Many of the author's conclusions differ from those reached by Perrier; GARNAULT (4). Some of these conclusions controverted; BERNARD (2). Reply; PERRIER (2).

In *Ampullaria* the kidney consists of a large cavity, occupying the last turn of the spiral to the right of and behind the heart. It leads into a second kidney situated near the end of the gill, which again communicates with the exterior on the right side of the back, and not near the anus, as hitherto asserted. The large cavity encloses a considerable part of the intestine and the female generative glands; BOUVIER (2).

Nephridia of *Sepia* secrete uric acid and phosphates; salivary glands of *Helix* yield a soluble ferment, capable of transforming starch into sugar. The "liver" in *Helix*, *Limax*, *Anodonta*, &c., is pancreatic in function; GRIFFITHS (2).

Ureter in *Helix* is sometimes a closed tube, sometimes a groove; BRACN (3).

Development of the ureter of *Helix pomatia*, and remarks on the divisions *Nephropneusta* and *Branchiopneusta* of v. Ihering; *id.* (4).

Two forms of pericardial gland are distinguished in the *Pelecypoda*; its function is excretory; GROBBEN (3).

The histology of the pedal gland in *Pleurobranchus*, *Pleurobranchaea*, and *Pleurophyllidia* has been investigated; RAWITZ (1).

Semper's organ appears to be glandular, not sensory; the same is the case with the pedal gland in *Limax*; HANITSCH.

The purple-gland of *Aplysia* serves to purify the blood; SAINT-LOUP.

The formation of the byssus and the histology of the organ which secretes it has been studied in *Dreysensia polymorpha* and some other forms. It is a cuticular formation, and like other similar structures can be thrown off and replaced; this action is accompanied by a degeneration of the byssus cavity, which recovers its normal development with renewed activity; REICHEL.

The different stages in the secretory activity of the goblet cells in the mantle of Mussels described; special importance assigned to the nucleus in regard to the nutrition of the cell; RAWITZ (2, 3).

Spectrum of enterochlorophyll of *Limnaeus* figured; MACMUNN.

Verrill's organ noted in embryos of *Loligo*; probably glandular in function; LAURIE.

The structure known as "Verrill's organ" was first described by H. Müller in 1853; BROCK (1).

Crypts in the siphons of certain *Pelecypoda* are filled with a mucus, in which can be distinguished luminous bacilli; DUBOIS (2).

7. Nervous System.

The general arrangement of the nervous system of the *Gastropoda*

is discussed in its bearings on classification, and the following arrangement proposed :—

- | | | |
|-----------------------|---|--------------------|
| " 1°. Astrepsineurés. | { | I. Notoneurés. |
| | | II. Gastroneurés. |
| | | III. Pleuroneurés. |
| " 2°. Strepsineurés. | { | IV. Aponotoneurés. |
| | | V. Epipodoneurés." |

LACAZE-DUTHIERS (1).

Criticisms of Lacaze-Duthiers ; PELSENEER (8, 10, 11).

Orthoneura proper do not exist. Orthoneury is a specialized chiastoneury ; PELSENEER (5).

From an exhaustive examination of the nervous system, it is concluded that the arms of the *Cephalopoda* are pedal in origin, and hence not homologous with the buccal appendages of the *Pteropoda gymnosomata* ; PELSENEER, (2) pp. 65-74 ; also *id.* (4).

Bouvier's conclusions regarding the nervous system of *Valvata* are substantiated ; GARNAULT (4, 6) : these are criticised ; BERNARD (2).

In the suboesophageal nervous mass of *Fissurella* two centres are morphologically distinct, quite as much so below as above ; the study of early embryos confirms this. The ganglia have the form of cylinders, united in pairs by one of their faces. The collarette is a part of the mantle, and may be termed "inferior mantle" ; BOUTAN (2).

Curvilinear motion towards the injured side in Snails, whose supracoesophageal ganglia have been destroyed, is described ; PETIT.

The pedal nerve-cords of *Trochus* and other genera are described ; they are single, not double as stated by Lacaze-Duthiers. The epipodium of various Gastropods is discussed, and its true pedal nature and homology with the funnel of *Cephalopods* maintained ; PELSENEER (6, 7).

The minute distribution of the nerve-endings in the digestive tract of *Helix* described ; GRIER.

Influence of the nervous system on ciliary motion ; VVEDENSKII.

8. Sensory Organs.

In *Prosobranchiata* the neurilemma of the optic nerve expands into a transparent basal membrane ; the pigment is external to the layer of rods. The unpigmented, flask-shaped cells gradually diminish at their outer ends, and pass into nerve-fibres, as first made out in *Pterotrachea*. The rods consist of delicate columns, rounded internally, longest near the fundus. The connective framework of Simroth contains stellate cells as well as fibres. Structure of the vitreous body elucidated. In *Pecten* all parts of the Gastropod eye are present ; KALIDE (2).

Sense-organs of the mantle-margin of the *Ostreacea* treated in great detail ; RAWITZ (2).

In the rudimentary eyes of *Guivillea* the refractive media and pigment have disappeared ; the retina has lost its cellular elements, and the optic nerve its fibrillar structure. An account is also given of the rudimentary nature and absence of the eyes of various other *Mollusca*, and animals dwelling in caves ; PELSENEER (3).

Sense organs like those of Chitons have been found in the shells of many Gastropods and Pelecypods; eyes of *Trigonia* resemble the ommatidia of Insecta. Sense organs, seemingly visual, described in the mantle of *Siphonaria*; TENISON-WOODS (1).

An inversion of the retina has probably taken place in the cases of *Onchidium* and *Pecten*; MARK.

The so-called eyes of *Tridacna* are not visual organs; possibly they are phosphorescent; their structure is described; BROCK (2).

The siphon of *Pholas dactylus* expands in the dark, but contracts immediately under the influence of light, even after removal from the animal. The time required for this action under different kinds of light has been examined; DUBOIS (3).

The otocysts of *Murex* described by Haller are accessory salivary glands; BOUVIER (3).

Right rhinophore of *Triopa clavigera* formed of three branches; FISCHER (2).

Notes on olfactory organ of several *Cephalopoda*; WEISS, pp. 88 & 89.

Tentacular filaments in *Haliotis* are always three in number; SMITH (2).

9. Generative Organs.

The recent literature on the development of the generative organs of Gastropods is summarised and criticised; SCHIEMENZ.

Examination of *Lymnæus* supports, on the whole, the views of Brock and Rouzaud as to the development of the generative organs; EISIG said to have been mistaken in numerous points; KLOTZ.

Remarks on *Limnæa*; WILLIAMS (5).

In *Aplysia fasciata* the hermaphrodite gland contained only spermatozoa; the capillaries open into lacunæ; the purple gland is active in purifying the blood; the hermaphroditism is not absolute, but there is a physiological separation of the sexes at different times; SAINT-LOUP.

Hermaphroditism of *Valvata piscinalis*; GARNAULT (4, 6).

Generative apparatus of *Helix faustina* and *H. rossmüssleri* figured; BRANCSIK (1).

In *Ampullaria* the ovary is not situated at the extremity of the spiral, but embedded in a large whitish albumen gland. The duct is approximated to the rectum, and opens below and a little behind the anus. The male gland is situated in the place usually occupied by the female; its duct is rather large, and opens upon the same process as the female duct. A case of hermaphroditism was observed in which separate male and female glands were present, an arrangement quite distinct from the hermaphroditism of the *Pulmonata* and *Opisthobranchiata*; BOUVIER (2, 5).

Further investigation on species of *Vitrina*, and especially on the darts, detailed; SIMROTH (1).

Two kinds of spermatozoa, spiriform and filiform, are described in *Eteclone*. Observations on these confirm the author's previous statement that the vermiform spermatozoa of *Paludina* are colonies; SABATIER.

Two modes of development of spermatozoa are described in *Aplysia*, but there does not appear to be any morphological difference between them; ROBERT.

In *Murex* the nuclei which give rise to the spermatogonia are disposed as in *Arion* and *Helix*, and give rise to two different kinds of elements: voluminous cells, which are the mother cells of the vermiform spermatozooids, and small membrane-less cells, which are the mother cells of the filiform spermatozooids. These are quite distinct throughout their whole existence. The differences which obtain in the cases of *M. brandaris* and *M. trunculus* are noted. The vermiform spermatozoa are morphologically ova, and seem to have no determinate function. Perhaps they represent in the testes of the higher Prosobranchs the ova of the hermaphrodite gland of the more archaic Prosobranchs (*Monotocardia*); KÖHLER.

Observations upon the mother-cells (spermatogonia and spermatocytes), at rest and in division, and upon the spermatid cells and their differentiation into spermatozooids, lead to conclusions at variance, in many respects, with those of Platner; PRENANT.

In the *Chitonidae* only one membrane ever encloses the egg; it may be termed "follicular," and is always composed of nucleated cells, sister cells of the ovum; the structure of the mature egg is described, and the expansion and contraction of the vitelline masses; GARNAUT (2).

The oogenesis and fertilization of *Helix* and *Arion* treated histologically; *id.* (3, 5, 9).

Experimental proof that hermaphrodite Snails are self-fertilising; BRAUN (2, 5).

Helices, when once impregnated, can lay eggs several years without further coitus; oviposition takes place from May to July; BROCKMEIER. Further observation on *Helices*; HARTWIG.

Copulation and oviposition of *Eledone* and *Sepia* described; JOUBIN (1).

The spermatophores in the female *Rossia oweni* were found embedded in the skin below the eye; HOYLE (1).

Statements as to the time of sexual maturity of various species; LO BIANCO.

Hectocotylisation of *Inioteuthis*, spp., described; ORTMANN, p. 647.

Right tentacle enlarged and curved outwards in male of *Campeloma*; CALL (2).

Sucker in female of *Pterotrachea*; FEWKES (2).

Those so-called females of *Pterotrachea* which have suckers are probably males which have lost the penis by the attacks of *Crustacea*; GIARD (3).

List of *Mollusca* in which parasitic castration has been observed; *id.* (1).

Castration of *Helix aspersa* by the sporocysts of a Trematode; GARNAUT (7).

Nidus of *Lunatia heros*; SEIDENSTICKER.

Ova have been found to be nursed in the gill-chambers of *Unio*, *Siphonaria*, *Patella*, and *Acmæa*; TENISON-WOODS (1).

Egg masses on the shell of *Hydrobia ulra*, probably its own; HERDMAN.

For a few remarks on records of hybridity, see SUCHETET,

10. *Embryology.*

A research on the early development of *Sepia* [cf. Zool. Rec. xxiv, *Moll.* pp. 28 & 39] is published in full, with illustrations; VIALLETON.

In the segmenting ovum of *Loligo* three zones are recognised—central, intermediate, and marginal. The second becomes by delamination two cells thick; certain cells in it assume a spindle-shape, and are regarded as yolk-membrane hypoblast-cells, although they do not share in the formation of the digestive tract; WATASE.

The embryology of the *Unionidae* has been followed, and is described in detail, with illustrations, until the shell has attained a length of about 2 cm.; SCHIERHOLZ.

Philina aperta lays its eggs in elongated masses on the sand. The vitellus, 0.1 mm. in diameter, divides into two, then four, after which bilateral symmetry is apparent. Eight ectodermal cells gradually surround by epibolic division the four vitelline cells. One ectodermal cell becomes clear, and divides into four, which are the primitive mesoderm. The blastopore is situated in the middle of the ventral surface; it is slit-shaped, and the two sides meet, separating an anterior portion, the future mouth, and a posterior which becomes the shell-gland. The velum and foot are formed in the usual way. The pedal ganglion arises from cells lying against the otocyst. There are no cephalic eyes, but a large lateral one, situated where the anus will afterwards appear. The endodermal cells form a cavity by division, which corresponds to the future liver, stomach, and intestine; the mouth and anus are formed late. The external layer of the mesoderm, not growing so rapidly as the ectoderm, becomes vacuolated, and the cavities thus produced fuse together. In this way, and not by cleavage, the coelome is formed. There is a large columellar muscle, and also an operculum. The embryo at first swims, then sinks, owing to atrophy of the velum; LACAZE-DUTHIERS & PRUVOT.

Development of *Limax agrestis*; SHALFEEV'.

Account of early stages of *Chromodoris elegans*; RHO.

Various stages, especially the later ones, of the oyster are described; the names "prodissococonch" and "dissococonch" are proposed for the larval and adult shells of *Pelecypoda*; JACKSON, R. T. (1).

Young of *Mytilus edulis* often settle for a time on *Gonothyraea*; other occasional sites recorded; MCINTOSH.

11. *Phylogeny.*

The *Pelecypoda* have probably arisen from some such form as *Nucula* or *Trigonia*, and have diverged to the *Ostracidae* in one direction, and to *Aspergillum* in the other; SHARP.

Phylogenetic arrangement of the *Pelecypoda*, as deduced from the structure of the gills; PEISENER, (3) pp. 26, 27, & 37-40.

Phylogeny of *Cephalopoda*; HYATT.

The *Vitrinidae* are the ancestral group of a considerable number of the *Pulmonata*; SIMROTH (1). Also *id.* (4).

12. Stray Biological Notes.

Elaborate investigation of the mutual relation between Land Molluscs and plants, with special reference to the protective appliances of the latter; STAHL.

Trigonia strangei lives in deep mud, and only dead shells are ever washed out; COX, Zool. Anz. xi, p. 122.

Occurrence of *Helix ciliata*, *Clausilia abietina*, *Pupa secale*, and *P. frumentum*, in pine forests; MARTENS (3): *H. rossmässleri* and *C. rupestris*; MALTZAN (3): *H. juillei* and *H. punicea*; KOBELT (11): *H. pomatia*, *H. obovata*, *H. personata*, *C. lineolata*, *C. plicatula*, *C. ventricosa*, *Hyalina alliaria*, *Patula rudrata*; SCHRÖDER (3).

Those species which inhabit the shore can stand influence of fresh water better than those from deeper water; VARIGNY.

Large *Purpura lapillus* in brackish water; ROBERTSON.

Continued researches on the influence of temperature on the growth of *Planorbis*; BALASHEVA.

Effect of the electric light on various species; LACAZE-DUTHIERS (2).

Comparative erosion of shells in different waters; BEAUCHAMP (1).

Perforation of limestone by *Helix aspersa*; FOREL, BRETONNIÈRE.

Popular notice of Boring Mollusca; JUKES-BROWNE.

Aquatic Mollusca creep inverted at the surface of the water, first by taking advantage of a thin pellicle of dust and other particles, and then by adhesion to a film of their own mucus; WILLEM.

Floating of *Limnea truncatula* observed; NELSON, KEW (1): also of *L. auricularia*; WILLIAMS (6).

Spontaneous amputation; EHLERT.

Notes on attempts to rear Chinese and Tyrolese snails in a terrarium; GREDLER (2).

Rearing of *Daudebardia rufa*; BRANCSIK (2).

Bulimus decollatus is carnivorous; HELE.

Phosphorescence of *Pholas* due to a micro-organism (*Bacillus pholas*), which is luminous in alkaline media; DUBOIS (1).

The causes of deaths from poisoning by *Mytilus edulis* have been investigated; LUSTIG.

Entocolax parasitic on *Myriotrechus*; VOIGT [cf. p. 77, *postea*].

Mussel $\frac{3}{4}$ inch long attached to branchiæ of *Carcinus maenas*; PIDGEON, W. R.

Large *Anodonta* clinging to the foot of a water bird; SCHÄFF.

Spharium attached to leg of water beetle; KEW (2).

Platyceras was sedentary on Crinoids; KEYES.

Ocula acicularis, living on *Gorgonia flabellum*, resembles it closely in colour; the same is the case with *Pedicularia*, which also lives on corals; MALTZAN (2).

Notes on cellar-slugs; GOLDFUSS (3).

Chrysalis-cases of Phryganid larvæ resemble *Valvata piscinalis*; larvæ of some Coleophorids resemble *Clausilia*; SIMROTH (2).

List of 11 Molluscs from haddocks' stomachs; SCOTT (3).

Three new parasites of *Solen vagina*; KUNSTLER.

Mite parasitic on *Testacella scutulum*; QUILTER (1).

Boring of shells of *Ostrea* and *Mytilus* by Sponges (*Cliona stationis*); NASSONOFF.

The cells of the mantle-margin of *Tridacna* are full of symbiotic *Algae*; BROCK (2).

Variation of *Limnæa peregra* possibly dependent upon environment; MADISON.

Variation, with special reference to nomenclature of varieties; TAYLOR (1).

13. Abnormalities.

Triopa clavigera with branched rhinophore; FISCHER (2).

Haliothis shell with two rows of perforations; SMITH (2).

Form with depressed apex, channelled suture, and pyriform aperture of *Bythinia tentaculata*; *id.* (7).

Monstrous form (scalar) of *Helix lapicida*; MILNES.

Sinistral *Helix nemoralis*; FENN.

Abnormal *Anodonta cygnea*; ROBERTS (4).

COLLECTING AND PRESERVING.

Instructions for collecting; STERKI (1, 3), PRETE, MICHAEL, WILLIAMS, J. W. (1).

Suggestions for collective investigation in the *Unionida*; KOBELT (9).

Keeping shells in tubes; LAYARD (1), PIDGEON, D.

GEOGRAPHICAL DISTRIBUTION.

LAND AND FRESH-WATER MOLLUSCA.

The present distribution of the operculate land-shells is fully discussed, with reference to palæontology and to geographical considerations; KOBELT (6).

Distribution of *Pulmonata* in general discussed; SIMROTH (6).

I.—PALÆARCTIC ZONE.

1. Septentrional Region.

Greenland. HOLM.

British Isles.

Clausilia pumila, Zgl., new to England; WOODWARD. Distribution of *Testacella scutulum*; TAYLOR (5). See also WILLIAMS, J. W. (2, 7), and further notes in "Science Gossip," by COCKERELL; ROBERTS; TOMLIN; WILDMAN.

List of 183 titles of papers, some of which have escaped entry in the Zool. Rec.; ROEBUCK & CLARKE.

- Kinnoull Hill.* COATES.
Bute. SCOTT (1).
Tarbert, Loch Fyne. *Id.* (2).
Cumberland. DONALD.
Yorkshire. ASHFORD (1): 93 species, with localities; SOPPITT & CARTER. See also NELSON.
Stockton-on-Tees. Reprint of Hogg's list of 20 species (1829), with notes; HUDSON.
Lancashire. TAYLOR (3).
Cheshire. MILNE.
Derbyshire. MELVILL (4); MILNES.
Cardiganshire. 21 species; COLLIER; TAYLOR (8).
Pembroke. TAYLOR (2).
Cardiff. WOTTON.
Gloucestershire. WILLIAMS, J. W. (3).
Leicestershire. QUILTER (2, 3).
Nottingham. ROEBUCK.
Bedford. SAUNDERS.
Essex. FRENCH.
Middlesex. COCKERELL, T. D. A. (5).
Hampshire. FITZGERALD.
Isle of Wight. TAYLOR (7).
Cornwall. COOKE (3); DA COSTA.
Ireland. List of species, with exact localities; three additions to fauna; TAYLOR & ROEBUCK.

France.

Remarks on *Bulimus* and other genera; ANCEY (9). *Unio baudoni*, n. sp.; FOLIN (5). *Anodonta*, 4 new species, *Unio*, 4 new species; DROUET.

- Picardy.* 37 species; COCKERELL, S. C.
Caudebec-en-Caux. Few species; BERGEVIN.
Nemours. *Helix ghazouana*, n. sp.; KOBELT, (1) p. 50.
Cote d'Or. List; BEAUDOUIN.
Savoy. *Unio*, 2 new species; DROUET.
Biarritz. *Limnæa mamillata*; SERVAIN, (2) p. 292.

Netherlands.

Scheldt. *Cyrena fluminalis*; VINCENT.

Germany.

- Hamburg.* List of species, 22 new species; SERVAIN (2).
Hannover. Few additions to local fauna; GEHRS.
Göttingen. KOENEN.
Hüllé. Mollusca of fresh- and salt-water lakes in neighbourhood; ZACHARIAS.
Trier. Occurrence of *Unio margaritifera*; FISCHER, K.
Ober Franken. *Helix (Campylæa) cingulata*; REINHARDT.
Munich. Several species from neighbourhood: *Helix (Fruticicola)*

sericea, var. *dubia*, *Clausilia* (*Clausiliastra*) *fimbriata*, *Limnæa auricularia* var. *ventricosa*, *L. ovata* var. *fontinalis*, and *Acma sublineata*, new to Germany; REULEAUX.

Switzerland. *Clausilia* treated by CLESSIN (1).

Lake of Geneva. *Unio batavus*; SCHARDT.

Zermatt. *Helix harpa*; TAYLOR (4).

Riffelalp. *Helix harpa*; CRAVEN.

Alpine Lakes. Few *Mollusca*; IMHOF.

Austro-Hungary.

Clausilia treated by CLESSIN (1).

Moravia and Bohemia. *Hyalina inopinata*, n. sp.; ULÍČNY (1).

Bohemia. List of additions to fauna; SANDER.

2. Circum-Mediterranean Region.

Portugal.

Slugs of this country; SIMROTH (5). See also GIRARD.

Spain.

Unio gaudiensis, n. sp.; DROUET.

Andalusia. *Unio*, 4 new species, *Anodonta*, 2 new species; KOBELT (8).

Aragon. FAGOT.

Catalonia. *Id.*

Barcelona. *Testacella*, 2 new species; POLLONERA (1).

Pyrenees. SALVAÑA (2; 3).

France.

Drome. List, with 2 new species of *Helix*; SAYN.

North Africa.

Marocco. *Helix*, 3 new species; WESTERLUND. *H. subjobeana*, n. sp.; KOBELT, (1) p. 47. *H. (Monacha) semirugosa*, n. sp.; *id. t. c.* p. 15. *H. cyclostrematoides*, n. sp.; SOWERBY (1).

Algeria. 4 new species; WESTERLUND.

Oran. *Helix*, 2 new species; KOBELT, (1) pp. 46 & 48.

Tunis. 4 new species; ANCEY (10).

Italy.

4 species of *Limax* (1 n. sp.) figured and redescribed; POLLONERA (3).

N. Italy. Several new varieties and 14 new species; ADAMI.

Turin. *Testacella*, 2 new species; POLLONERA (2).

Sardinia. *Helix ischnusa*, n. sp.; WESTERLUND.

Corsica and Sardinia. *Helices* of the group *H. raspaili*, 8 new species; HAGENMÜLLER.

Malta. *Helix caruanae*, n. sp.; KOBELT (10).

Austria.

Dalmatia. *Hydrocena*, 2 new species; LETOURNEUX.

Dinaric Alps and Dalmatia. *Helices*, with 13 new species; BOURGUIGNAT.

Bosnia. Excursion notes with some new varieties ; BRANCSIK (4).

Istria. Lists of species, none new ; BLUM.

Styria. *H. tschapecki*, n. sp. ; WESTERLUND.

Turkey and Greece.

Greece. 2 new species ; BETTGER (1).

Syria. *Helix eminens*, n. sp. ; WESTERLUND.

Asia Minor. *Mesolimax*, n. g. ; POLLONERA (2).

Levant.

Jericho. *Helix hiericontina*, n. sp. ; WESTERLUND.

Pontic District.

Black Sea. *Paludina diluviana* ; NEUMAYR.

Armenia. *Anodonta brandti*, n. sp. ; DROUET.

Caucasus. List of forms, several new varieties, 1 new species ; RETOWSKY. 11 new species and new varieties ; BETTGER (2).

Northern Caucasus. FAUSEK.

3. Central Asiatic Region.

Turkestan. *Buliminus* (*Subzebrinus*) *alaicus*, n. sp. ; KOBELT, (1) p. 39.

4. Chinese Region.

China. 12 new species, genus *Trochomorpha* new to China ; MÖLLENDORFF (4). 23 new species, with critical notes on others ; GREDLER (1).

Melania, n. sp., *Buliminus*, 3 new species ; ANCEY (2). 38 new species, *Funiculus*, n. g. ; HEUDE. *Helix*, 2 new species ; MABILLE (2).

Shanghai. *Prososthenia schmackeri*, n. sp. ; MÖLLENDORFF, (2) p. 143.

Hunan. 3 new species, with notes on others ; *id.* (2).

Tonkin. *Helix*, 5 new species ; MABILLE (1). List of shells, 3 new species ; ANCEY (8).

5. Japanese Region.

Japan. *Helix vatheleti*, n. sp. ; MABILLE, (1) p. 74.

6. Atlantidean Region.

Slugs of this region treated with respect to their origin ; SIMROTH (5).

Canary Is. *Helix*, 3 new species ; MABILLE (2).

Gran Canaria. *Helix*, 10 new species ; *id. t. c.*

Teneriffe. *Helix*, 22 new species ; *id. t. c.*

Gomera. *Hyalina rochebruni*, *Helix*, 2 new species ; *id. t. c.*

Lanzarote. *Helix thumalea*, n. sp. ; *id. t. c.*

Fuayal. Several Molluscs in the Caldeira ; GUERNE, (1) p. 37.

II.—PALÆOTROPICAL AFRICAN ZONE.

7. *Central African Region.*

Ethiopian Region. Slugs classified with 4 new genera ; SIMROTH (3).

E. Africa. Few Molluscs mentioned ; STUHLMANN.

Shoa. List of species, with notes and 13 new species ; POLLONERA (1, 5).

Albert Nyanza. 15 known forms, 5 new species ; SMITH (10).

8. *West African Region.*

West Africa. List of 104 species ; VIGNON.

Upper Senegal. 5 new species ; ROCHEBRUNE (2).

Liberia. 27 species (4 new) ; SCHEPMAN (1).

Assinie. *Achatina bayoli*, n. sp. ; MORELET.

Cameroons. Notes on 3 species ; SMITH (9).

Princes I. 26 species (none new) ; CROSSE (2).

San Thomé. 21 species (1 new) ; *id.* (1).

9. *South African Region.*

Damara. 2 new species ; ANCEY (10).

Cape Colony. *Pupa glanvilliana*, n. sp. ; *id. op. cit.*

10. *Malagasy Region.*

Madagascar. *Cyclostoma eustolum*, n. sp. ; CROSSE & FISCHER (2).

III.—PALÆOTROPICAL ORIENTAL ZONE.

12. *Indian Region.*

India. Monograph continued, with genera, *Macrochlamys*, *Girasia*, *Africarion*, *Oxytes* ; numerous new forms ; GODWIN-AUSTEN (1).

Ceylon. List of *Cyclostomidæ* ; KOBELT, (6) pp. 340–342.

13. *Indo-Chinese Region.*

Further India. List of *Pneumonopoma* ; KOBELT, (6) pp. 338–340.

Hindet, Burma. 7 species (3 new) ; GODWIN-AUSTEN (3).

Shan Hills. 12 species (7 new) ; *id. t. c.*

Andamans and Nicobar Is. 10 species (6 new) ; *id.* (2).

Siam. *Hemiplecta* ?, n. sp. ; *id.* (3).

Cochin China. Catalogue with 29 new species, *Harmandia*, *Lymnoperna*, and *Bocourtia*, n. gg. ; ROCHEBRUNE (3).

Sumatra, Java, and Borneo. 7 species (3 new) described and figured ; SMITH (5).

Borneo. *Paludina semmelinki*, n. sp. ; SCHEPMAN (2).

15. *Philippine Region.*

Philippines. Continued account of excursions, with descriptions of 17 new species and 2 new subgenera; MÖLLENDORFF (5). Critical remarks on Hidalgo (*cf.* Zool. Rec. xxiv, *Moll.* pp. 12 & 47); *id.* (1). 12 new species; *id.* (6). List of species, with notes, 13 new species; HIDALGO (1). 3 new species; *id.* (2).

Mindanao. *Helix boxalli*, n. sp.; SOWERBY (1).

Cebu. Notes and additions, with 6 new species; MÖLLENDORFF (3).

IV.—AUSTRALIAN ZONE.

16. *Austro-Malayan Region.*

New Guinea. List of additional forms, 1 new species; TAPPARONE-CANEFRI.

New Ireland. *Cochlostyla hindei*, n. sp.; COX.

17. *Australian Region.*

Queensland. HEDLEY.

Tasmania. List with 12 new species, *Brazieria* and *Beddomeia*, n. gg.; PETTERD (1). Two new species; *id.* (2).

18. *Austro-Polynesian Region.*

New Hebrides. 7 new species; HARTMAN (3).

New Caledonia. *Stenogyra octona*; LAYARD (2). Revision of certain genera; ANCEY (2).

19. *Polynesian Region.*

Sandwich Is. *Achatinella*, 4 new species; HARTMAN (2). *Amastra similaris*, n. sp.; *id.* (3).

20. *Neo-Zelanian Region.*

New Zealand. Reprint of list by HUTTON, see CLESSIN (7). Remarks on slugs; SIMROTH, (5) p. 88.

VI.—NEO-TROPICAL ZONE.

25. *Brazilian Region.*

S. Brazil. Notes on a collection, with 5 new species; CLESSIN (6).

Rio Grande. 2 new species; MARTENS (5).

26. *Mexican Region.*

Mexico. In the account of the terrestrial *Mollusca*, the fam. *Cyclophoridae* is concluded, and *Cyclostomatidae* commenced with the genus

Adamsiella; no new species; FISCHER & CROSSE. *Helix verrilli*, n. sp.; ANCEY, (7) p. 63.

Central America. *Pyrgulopsis*, 4 new species; ANCEY, (1) pp. 194-201.

27. Caribbean Region.

Antilles. *Colobostylus*, n. g., for 25 species of *Cyclostomatidæ*; CROSSE & FISCHER (3).

Dominica. 34 species, 1 perhaps new; SMITH (3).

Haiti. 12 new species; MALTZAN (1).

VII.—NEARCTIC ZONE.

28. Atlanto-American Region.

North America. List of *Cyclostomatidæ*; KOBELT, (6) pp. 336-338. *Hyalina sterkii*, n. sp.; DALL (4).

Indian Territory. List of species (1 new); SIMPSON (9).

Colorado. *Physa elliptica*; COCKERELL, T. D. A. (10). See also *id.* (4, 12).

Nebraska. *Succinea lineata*, Binney; SIMPSON (2).

Iowa. *Margaritana hildrethiana* in large numbers; SHIMEK.

Minnesota. 32 species; GRANT. 89 species from Winona county; HOLZINGER.

Michigan. *Planorbis multicalvis*, Case, and *P. truncatus*, Miles, rediscovered; WALKER.

Illinois. 14 *Strepomatidæ*; HINCKLEY (2). 96 species, none new; MARSH.

Missouri, Ozark Region. *Unio ozarkensis*, *U. breviculus*; CALL (1).

Ohio. 11 *Physæ*; STERKI (2).

New York. Notes on *Unio* spp., *Bythinia tentaculata*, *Carychium exiguum*, &c.; BEAUCHAMP (2).

Philadelphia. Notes on a few species; FORD (2, 3).

Florida. *Carychium exiguum*, Say, new to U.S.A.; SIMPSON (3). *Unio*, 11 new species; WRIGHT, B. H. (2). *Unionidæ* catalogued; *id.* (1).

Bermuda. Descriptions of 4 snails; PILSBY (4).

29. Californian Region.

Western States. Popular account of *Mollusca*; KEEP.

California. COOPER.

MARINE MOLLUSCA.

Oceanic Areas.

General observations on distribution of marine forms; LIERENA.

Discussion of deep-sea forms of the American coast, with figures of the most important types; AGASSIZ, DALL (1). See also MARSHALL, RICHTERS.

The distribution of the *Pteropoda* in the different ocean basins is treated, with addition of exact lat. and long., and description of 1 new species; MUNTIE. Also, with descriptions of 3 new species; PELSENER (1).

1. Arctic Province.

Greenland. List of species; HOLM.

Kamtshatka. *Chetoppleura thouarsiana*, n. sp.; ROCHEBRUNE (4).

2. Boreal Province.

New Brunswick. List of species, with notes; GANONG. See also WINKLEY.

Fundy Bay. *Clione borealis* and its larva; FEWKES (1).

3. Celtic Province.

Moster. List with notes; GRIEG.

Cattegat. 113 Gastropods and 86 Pelecypods enumerated, with their exact localities; relations to European Molluscan fauna discussed; PETERSEN.

Britain. *Patella taslei*, n. sp.; MABILLE (1). Notes on few *Mollusca*, *Siphonentalis affinis* (Sars) new to Britain; ROBERTSON. See also SOMERVILLE (2).

Scotland, West Coast. *Trophon truncatus* var. *scalaris* (dead); *id.* (1). Few species recorded; HOYLE (2).

Tyrone. About 50 species; GALWEY.

Devonshire. 42 species from raised beach; HUNT.

Plymouth Sound. HEAPE.

Cornwall. COOKE (1).

4. Iusitanian Province.

France. Occurrence of various species on the French coast attributed to the Gulf Stream; GIARD (2). Monograph of genus *Pecten*, 35 species; LOCARD (2). *Modiola* revised, 3 new species; *id.* (4). *Patella taslei*, *P. servaini*, n. spp.; MABILLE (1).

Wimereux. Occurrence of a few species noted; GIARD (4).

Croisic. DOLLFUS (2).

Concarneau. Catalogue of forms collected; SERVAIN (1).

Arcahon. *Corambe* sp.; FISCHER, D. (1).

Algeria. *Acanthochites hamatus*, n. sp.; ROCHEBRUNE (4).

Tangier. *Patella goudoti*, n. sp.; MABILLE (1).

Gulf of Marseilles. 2 new Nudibranchs; VAYSSIÈRE (3).

Rousillon. Handbook continued; BUCQUOY, DAUTZENBERG, & DOLLFUS.

Provence. *Proneomenia*, 4 species (2 new); MARION & KOWALEWSKI.

Naples. *Dondersia festiva*, n. g. & sp.; HUBRECHT.

Palermo. List of *Mollusca* from the harbour, numerous varieties; MONTEROSATO.

Madeira. *Patella teneriffa*, n. sp.; MABILLE (2).

Canaries. *Patella ordinaria*, *P. teneriffa*, n. spp.; *id. t. c.*

5. *Aralo-Caspian Province.**Caspian Sea.*

The Results of the Study of the Molluscan fauna are summarised; they show that the water must have been formerly much fresher than at present; no marine forms are found, but species comparable with those from the Tertiary basin of Southern Europe; DYBOWSKI.

Discussion of Molluscan fauna; NECHAY.

6. *West African Province.*

Liberia. 17 species, none new; SCHEPMAN (1).

Cape Verde Is. 12 n. spp.; ROCHEBRUNE (1).

Cameroons. *Conus prometheus* and *Strombus fasciatus*; MARTENS (4).

Limicolaria pretexta, n. sp.; *id.* (6).

Corisco. *Phasianella deaniana*, n. sp.; PILSBRY, (1) p. 169.

St. Helena. *Pleurotoma (Mangilia) subquadrata*, n. sp.; SMITH, (4) p. 313.

7. *South African Province.*

Cape of Good Hope. *Acanthopleura afra*, n. sp.; ROCHEBRUNE (4).

Algoa Bay. *Mitra ærumnosa*, n. sp.; MELVILL (2).

Port Elizabeth. 2 new species; SOWERBY (1).

Mauritius. *Pecten guendolene*, n. sp.; MELVILL (1). *Mitra*, 2 new species; *id.* (2). 2 new species; SOWERBY (1). *Leptothyra folini*, n. n.; PILSBRY, (1) p. 252. 13 new Nudibranchs, *Fenrisia*, *Facalana*, and *Bæolidia*, n. gg.; BERGH (1).

8. *Indo-Pacific Province.*

Zanzibar. *Cardita oblonga*, *C. pallida*, n. spp.; CLESSIN, (2) pp. 43 & 48.

Red Sea. 218 species (17 new species, 4 new genera); JOUSSEAUME. 2 new Chitons; ROCHEBRUNE (4).

Assab. List, with 10 new species; CARAMAGNA.

Gulf of Suez. *Pleurotoma (Drillia) parva*, n. sp.; SMITH, (4) p. 303.

Suez Canal. The whole question of the migration through the Suez Canal is exhaustively treated, with lists of the species which are supposed to have passed through, and a discussion of each case; KRUKENBERG (1). Criticisms on this work; KELLER.

Persian Gulf. *Pleurotoma*, 4 new species; SMITH (4).

Indian Ocean. 8 Nudibranchs, 4 new species, *Moridilla*, n. g.; BERGH (1). *Pleuroleura fortunata*, n. sp., *id.* (3). 12 Pteropods with lat. and long.; MUNTZE.

Bombay. *Pleurotoma*, 2 new species; SMITH (4).

Ceylon. *Pleurotoma (Drillia) unifasciata*, n. sp.; *id.*, (4) p. 300.

Bay of Bengal. *Malletia angulata*, n. sp.; SOWERBY (1).

Andaman Is. *Mitra*, 2 new species; MELVILL (2).

- E. Indies.* *Mitra transenna*, n. sp. ; *id. t. c.*
Singapore. *Phasianella fordiana*, n. sp. ; PILSBRY, (1) p. 173.
Malacca. *Tagelus obtusatus*, n. sp. ; CLESSIN, (5) p. 83. *Cardita albida*, n. sp. ; *id.*, (2) p. 49.
Malyasian Region. Catalogue of 400 species, none new ; TENISON-WOODS (2).
Cochinchina. Catalogue with 6 n. spp. ; ROCHEBRUNE (3).
New Guinea. *Acanthopleura rawakiana*, n. sp. ; *id.* (4).
Borneo. *Cryptoplax montanoi*, n. sp. ; *id. t. c.*
Philippines. *Pleurotoma*, 2 new species ; SMITH (4). *Cardita philippinarum*, n. sp. ; CLESSIN, (2) p. 46. *Phasianella marchei*, n. sp. ; MABILLE (1). *Schizochiton polyophthalmus*, n. sp. ; ROCHEBRUNE (4).
China Sea. *Pleurotoma*, 5 new species ; SMITH (4). *Pleurotoma bulowi*, n. sp. ; SOWERBY (1).
Hong Kong. *Pecten valdecostatus*, n. sp. ; MELVILL (1). 3 new species ; SOWERBY (1).
Fiji Is. *Pleurotoma*, 2 new species ; SMITH (4). *Pecten*, 3 new species ; KOBELT (5).
New Caledonia. 4 new Chitons ; ROCHEBRUNE (4).
Ticao [err. typ. *Ficao*]. *Cardita irregularis*, n. sp. ; CLESSIN, (2) p. 46.

9. Australo-Zelanian Province.

- Australia.* Characteristics of Molluscan fauna discussed, its peculiarities are most marked in the southern portions ; 5 species enumerated common to Australia and Europe ; TENISON-WOODS, (1) pp. 106-114. *Cardita rubida*, n. sp. ; CLESSIN, (2) p. 47. *Phasianella peroni*, n. sp. ; MABILLE (1). 4 new Chitons ; ROCHEBRUNE (4).
Cape Three Points. *Pleurotoma (Drillia) suavis*, n. sp. ; SMITH, (4) p. 305.
Queensland. *Pleurotoma (Drillia) ventricosa*, n. sp. ; SMITH, (4), p. 301.
Port Essington. *Pleurotoma (Drillia) essingtonensis*, n. sp. ; *id.*, t. c. p. 303.
Norfolk Island. 36 species, none new ; BRAZIER.
New Zealand. 2 new Chitons ; ROCHEBRUNE (4).

10. Japanese Region.

- Japan.* Discussion of Cephalopod fauna, with 9 new species, 1 new genus ; ORTMANN. *Pleurotoma (Mangilia) lischkei*, n. sp. ; SMITH, (4) p. 312. *Siphonalia*, 2 new species ; MELVILL (6). *Pecten*, 2 new species ; *id.* (1). *Aspergillum giganteum*, n. sp. ; SOWERBY (2). *Lima smithi*, n. sp. ; *id.* (1).

12. Californian Region.

- Western States.* Popular account of *Mollusca* ; KEEP.
California. *Pleurotoma*, 2 new species ; SMITH (4). *Ocenebra michaeli*, n. sp. ; FORD (5). *Leptothyra carpenteri*, n. sp. ; PILSBRY, (1) p. 247.

13. *Panamic Province.*

Panama. *Pleurotoma (Drillia) cretata*, n. sp.; SMITH, (4) p. 305.

Central America. *Chatopleura dacrydigera*, n. sp.; ROCHEBRUNE (4).

14. *Peruvian Province.*

Iquique. *Cardita pasteliana*, n. sp.; OLESSIN, (2) p. 20.

Chili. *Modiola ovalis*, n. sp.; *id.* (4) p. 128. *Toncia fontainei*, n. sp.; ROCHEBRUNE (4).

15. *Antarctic Province.*

Magellans St. *Pleurotoma (Surcula) fuegiensis*, n. sp.; SMITH, (4) p. 300.

17. *Caribbean Province.*

W. Indies. *Arca d'orbignyi*, n. sp.; KOBELT (13).

Antilles. Several species from deep water; DALL (3).

Guadeloupe and Martinique. *Melongena melongena*, L.; DOLLFUS.

Jamaica. *Pleurotoma (Drillia) cookei*, n. sp.; SMITH, (4) p. 308.

Swan Is. *Mitra fergusonii*, Sowerby; DALL, (3) p. 9.

18. *Transatlantic Province.*

Florida. List of species dredged in shallow water; SIMPSON (1).

Natica fordiuna, n. sp.; *id.* (5). A few other species; *id.* (8).

Bermuda. Few species recorded; JONES. *Triton swifti*, Tryon; SIMPSON (3). 4 new species; HEILPRIN (2).

Rhode Island. Catalogue brought up to 169 species, 1 new species; CARPENTER. *Teredo*, species from; WESTGATE (1).

"Port du Roi George." *Chatopleura biarmata*, n. sp., ROCHEBRUNE (4).

PALÆONTOLOGY.

Tentaculites, *Conularia*, *Hyolithes*, and other palæozoic forms, are not *Pteropoda*; PELSENER, (2) pp. 92-94.

Notes on the distribution of the *Pulmonata* in time; SIMROTH (6).

Fossil *Pneumonopoma*; KOBELT, (6) pp. 334-336.

Helix semperiana, Crosse, of the mio-pliocene of N. Africa, is probably the ancestor of the recent *H. candidissima*, Drap.; THOMAS.

Account of the *Mollusca* of the Caspian Sea, and their bearing upon its geological history; NECHAY.

Paludina diluviana found living on shores of Black Sea; perhaps identical with species described by Bgt. from the Lower Danube; NEUMAYR.

Number of fossil shells from Touraine, with their recent equivalents recorded; DOLLFUS (1).

Criticisms regarding quaternary formations in N. Germany ; NEHRING (2).

Land and fresh-water shells from diluvium of Göttingen ; KOENEN.

List of land-shells from diluvial clay of Veronese-Thal and Kis-Piszko ; FRANZENAU.

Pleistocene of Moravia ; RZEHAŁ.

List of 42 species from a raised beach in Devonshire ; HUNT.

Fossils from near Turin ; POLLONERA.

Several recent species fossil in loess of Iowa ; WEBSTER.

Two subfossil species from Sweden ; CLESSIN (8).

Lists of Australian tertiary forms (many recent) ; JOHNSTON.

HISTORICAL CHANGES.

Helix pomatia a comparatively late introduction into North Germany ; MARTENS (2, 7) : see also NEHRING (1) ; POTONIE.

Crepidula fornicata adherent to American oysters transplanted to Cleethorpes ; SMITH, A.

Bithynia tentaculata, L., recently imported to America ; ANCEY, (7) p. 80.

Sudden appearance of *Stenogyra octona*, a West Indian form, in thousands, at New Caledonia ; LAYARD (2).

Reappearance of shells after supposed absence ; ROBERTS (2).

USE BY MAN.

Oysters and Mussels. Oyster fisheries of Maryland ; SEGRAVE.

Keeping of oysters by preventing their opening ; WILLIAMS, W. M.

Larval oysters caught on glass slides for microscopical examination ; JACKSON (2).

Oyster beds of New Brunswick ; WINKLEY.

Suggestions for mussel-culture at Cardross, Dumbarton ; ROBERTSON.

The cause of poisoning by eating mussels discussed, and referred to micro-organisms ; LUSTIG.

Pearls. Pearls of fresh-water mussels ; DRÖGEMÜLLER. Possibility of culture of the mussels ; SCHIERHOLZ, p. 34 [of sep. copy].

Composition of pearls ; HARLEY.

The use of *Pecten*-shells by pilgrims, with notes on the origin of the custom, treated by LOCARD (5).

Cyclophorus saturnus and *C. fuliginatus* as delicacies in Tonkin ; DAUTZENBERG & HAMONVILLE, J. de Conch. xxvii, 1887, p. 221.

Varieties of *Cochlostyla* artificially manufactured ; GOLDFUSS (2).

Sepia and shell of *Trochus marmoratus* objects of commerce ; BROUSMICHE.

Gigantic Cephalopod in Eskimo mythology ; BOAS.

Helix hortensis and primitive man ; GOLDFUSS (1).

CEPHALOPODA.

The British Museum Catalogue of Fossil *Cephalopoda* contains an interesting discussion of the subdivisions of the *Tetrabranchiata*, of the order of succession of the principal types, and of the distribution of the *Nautiloidea* in space and time. The *Nautiloidea* include the following families :—*Orthoceratidae*, *Endoceratidae*, *Actinoceratidae*, *Gomphoceratidae*, *Ascoceratidae*, *Poterioceratidae*, *Cyrtoceratidae*, *Lituitidae*, *Trochoceratidae*, *Nautilidae*, *Bactritidae* ; FOORD.

Remarks on the phylogeny of Cephalopods ; HYATT.

DIBRANCHIATA.

OCTOPODA.

ARGONAUTIDÆ.

Argonauta argo : description of shell believed to be exceptionally complete ; DARBISHIRE.

TREMOCTOPODIDÆ.

Tremoctopus düderleini, n. sp., Tokio ; ORTMANN, p. 642, pl. xx.

OCTOPODIDÆ.

Octopus kagoshimensis, p. 644, pl. xxi, fig. 2, *O. brocki*, p. 645, pls. xxi, fig. 4, & xxii, fig. 1, n. spp., Japan ; ORTMANN. *O. chromatus*, n. sp., Bermuda ; HEILPRIN, (2) p. 324, pl. xvi, fig. 1. *O. harmandi*, n. sp., Cochin China ; ROCHEBRUNE, (3) p. 73.

DECAPODA.

MYOPSIDA.

SEPIOLINI.

Inioteuthis japonica and *I. morsei*, Vll., redescribed, with figures of bectocotylied arms and suckers ; ORTMANN, p. 647, pla. xxi, figs. 6 & 7, & xxii, figs. 2 & 3.

Microteuthis, n. g. Mantle dorsally as in *Rossia* ; mantle fastening by knobs fitting into depressions ; fins reniform posterior to middle of body ; gladius absent ; for *M. paradoxa*, n. sp., Kadsyama, Japan ; *id.* pp. 648 & 649, pl. xxii, fig. 4.

SEPIARI.

Sepia hoylei, p. 650, pls. xxii, fig. 5, & xxiii, fig. 1, *S. wroosa*, p. 652, pl. xxiii, fig. 2, *S. tokioensis*, p. 653 : l. xxiii, fig. 3, n. spp., Japan ; *id.*

LOLIGINEL.

Loligo tetradymania, p. 659, pls. xxiii, fig. 4, & xxv, fig. 1, *L. aspera*, p. 661, pl. xxv, fig. 3, n. spp., Japan; *id.*

CEGOPSIDA.

OMMASTREPHINI.

Ommastrephes caroli, Furtado, identified with a specimen figured by old authors. Young of *O. pteropus* probably often confounded with *O. bartramii*; STEENSTRUP. *O. gouldi*, n. sp., from Victoria; M'COY.

TAONOTEUTHI.

It is proposed, on anatomical grounds, to abolish this family, and to place the subfamily *Chiroteuthidae* under *Ommastrephini*, in close proximity to *Thysanoteuthis*; WEISS, pp. 91-93.

PTEROPODA.

The proposal of Boas to abolish this order is supported: the *Thecosomata* are placed in the Bulloid division of the *Tectibranchia*, and the *Gymnosomata* in the Aplysioid section; PELSENEER (2).

Pteropods to be placed with the *Euthyneura*; their propodium is the Gastropod sole, the epipodia are derivatives of it; GROBBEN (2).

Explanation of his views regarding the systematic relations of this group; IHERING.

Statistics regarding geographical distribution; MUNTHE.

THECOSOMATA.

The 'Challenger' Report on this group gives a list of all the generic names (34) hitherto proposed for recent forms; these are reduced to eight, disposed in three families (*Limacinidae*, *Cavoliniidae*, and *Cymbuliidae*) according to the classification followed in the sequel; PELSENEER (1).

LIMACINIDÆ.

Limacina, Cuvier, with 10 species, some new; PELSENEER, (1) p. 15.

Peraclis, Forbes (emend.), with *P. reticulata* (d'Orb.), p. 34, pl. i, figs. 7 & 8, and *P. bispinosa*, n. sp., Mid-Atlantic, p. 36, pl. i, figs. 9 & 10; *id.* t. c. See also, *id.* (9).

Agadina, Gould, is merely a Gastropod larva; *id.* (1) p. 37.

CAVOLINIIDÆ.

Clio, L., with subgg. *Creseis* (4 species), *Hyalocylix* (1 species), *Styliola* (1 species), and *Clio*, s. str. (7 species); *id.* t. c. pp. 42-47. *C. polita*, n. sp., Atlantic; *id.* t. c. p. 60, pl. ii, figs. 4-6.

Cuvierina, Boas, with only 1 species; *id. t. c.* p. 66.

Cavolinia, Abildgaard, with 8 species; *id. t. c.* pp. 69-76.

Oleodora schælei, n. sp., W. coast of Patagonia; MUNTZE, p. 18, figs. 15-19.

CYMBULIIDÆ.

Cymbulia, Péron & Lesueur, 2 species; PELSENEER, (1) pp. 96-98. *C. parvidentata*, n. sp., New Zealand; *id. t. c.* p. 99, pl. ii, figs. 12 & 13.

Cymbuliopsis, n. g., for *C. ovata* (Q. & G.) and *C. calceola* (Vll.); *id. t. c.* p. 100.

Gleba, Forskål, with 3 species; *id. t. c.* p. 101.

GASTROPODA.

PULMONATA.

Distribution in time and space, and phylogenetic relationship discussed; SIMROTH (6); also *id.* (4).

STYLOMMATOPHORA.

GEOPHILA.

AGNATHA.

TESTACELLIDÆ.

Ennea (*Diaphora*) *kochiana*, n. sp., Cebu; MÖLLENDORFF, (5) p. 79.

E. (Huttonella) hidalgoi, n. sp., Bulacan, Philippines; *id. t. c.* p. 78.

E. perakensis, Nevill, a young shell; ANCEY (2).

Oleacina mülleri, n. sp., Haiti; MALTZAN (1), p. 179.

Streptaxis thebawi, n. sp., Shan Hills; GODWIN-AUSTEN (3), p. 243.

Testacella scutulum distinct from *T. haliotideae*, with detailed description and records of British distribution; TAYLOR (5). *T. dubia*, p. 2, pl. ii, figs. 4-6, *T. subtrigona*, p. 3, pl. ii, figs. 1-3, Turin, *T. barcinonensis*, p. 4, pl. ii, figs. 13-16, *T. catalonica*, p. 5, pl. ii, figs. 7-9 & 17, Barcelona, n. spp.; POLLONERA (2).

GNATHOPHORA.

LIMACIDÆ.

Africarion ater, n. sp., Travancore and Tinnevely Hills; GODWIN-AUSTEN (1), p. 244, pl. lvii, figs. 1 & 2.

Ariophanta weyersi, n. sp., Sumatra; SMITH, (5) p. 219, pl. ix, figs. 8-10.

A. (Hemiplecta) hoodjongsensis, n. sp., Sumatra; *id. t. c.* p. 218, pl. ix, fig. 7.

Atozon, n. g., like *Trichotozon* (*vide infra*), but without darts; for *A. hildebrandti* and *A. schulzei*, n. spp. (*sine descr.*) Ethiopian region; SIMROTH, (5) p. 87.

Austenia? *khyoungensis*, *A. ? erratica*, n. spp., Shan Hills; GODWIN-AUSTEN, (3) p. 241.

Bertia, n. g., for *Nanina cambodgiensis*, Reeve; ANCEY, (3) p. 53. [*Bertia* used in *Diptera*.]

Buettneria, n. g., a dart gland united with the penis; for *B. leuckarti*, n. sp. (*sine descr.*) Ethiopian region; SIMROTH (5) p. 87.

Chalepotaxis, n. g., for *Nanina* (?) *infantilis*, Gredler; ANCEY (3) p. 22.

Estria, anatomy; POIRIER.

Euplecta carinaria, n. sp., Manila; MÖLLENDORF, (6) p. 143. *E. pin-goungensis*, n. sp., Shan Hills; GODWIN-AUSTEN, (3) p. 242.

Girasia dalhousiae, Chamba Hills, p. 224, pls. lxi, fig. 1, & lxii, fig. 4, *G. pankabariensis*, Darjeeling Hills, p. 225, pl. lix, fig. 1, n. spp.; *id.* (1).

G. (Austenia) theobaldi, Chinab Valley, p. 236, pl. lii, fig. 5, *G. (A.?) serahanensis*, Sutlej Valley, p. 237, pl. lii, fig. 4, n. spp.; *id.* t. c.

G. (Dekhania) beddomei, n. sp., Travancore Hills, p. 243, pls. lviii, fig. 1, & lxii, fig. 7; *id.* t. c.

G. (Ibycus) sikkimensis, Sikkim, p. 239, pl. lix, fig. 2, *G. (I.) cacharica*, Cachar Hills, p. 240, pls. lix, fig. 4, & lxii, fig. 5, n. spp.; *id.* t. c.

Helicarion ragazzii, Poll., 1887, figured; POLLONERA, (5) pl. ii, figs. 12-15.

Hemiplecta velutina (Sow.), = *H. xanthotricha*, Pfr.; *H. hidalgoi*, n. n., = *H. xanthotricha*, Semp.; *H. moerschii*, Pfr., = *H. velutina*, Hidalgo; MÖLLENDORFF, (1) p. 119. *H. ? zimmermanni*, n. sp., Siam; GODWIN-AUSTEN (3), p. 241.

H. (Plectopylis) ponsonbyi, n. sp., Maudalay; *id.* t. c. p. 243.

Hemitrichia, n. subg. "T. sat tenuis globosa vel depresso globosa, superne regulariter granulata, hirsuta vel cuticula velutina induta, subtus glabrata, valde nitens:" for *H. velutina*, Sow. (= *xanthotricha*, Pfr.), *H. moerschii*, Pfr., and 4 other species; MÖLLENDORFF, (5) p. 81. *H. hidalgoi*, n. sp., Manila; *id.* t. c. p. 85.

Hyalinia ischnusae, Sardinia, p. 55, *H. tschapecki*, Styria, *H. misella*, Algeria, p. 56, *H. oxystoma*, Algeria, p. 57, n. spp.; WESTERLUND. *H. inopinata*, n. sp., Moravia and Bohemia; ULÍČNY (1). *H. rochebruni*, n. sp., Gomera, Canaries; MABILLE, (2) p. 132. *H. sterkii*, n. sp., N. America; DALL (4). *H. iheringi*, n. sp., Taguara, Brazil; CLESSIN, (6) p. 166.

H. (Politu) subsuturalis, *H. (P.) oschtenica*, n. spp., Caucasus; BETTGER, (2) pp. 149 & 150.

H. (Retinella) difficilis, n. sp., Caucasus; *id.* *ibid.*

Lamprocystis goniogyra, n. sp., Siquijor, Philippines; MÖLLENDORFF, (6) p. 143.

Limax polipunctatus, n. n., = *L. millipunctatus*, var., Poll., Monte Castello; POLLONERA, (3) p. 2, pl. iii, fig. 5. *L. queenslandicus*, n. sp., with figures of teeth, &c.; HEDLEY, p. 150. *L. montanus* and *L. castaneus*, Ingersoll, synonyms of *L. campestris*, Binney; COCKERELL, T. D. A. (4).

Macrochlamys? woodmasoni, Little Coco I., p. 209, pl. liii, fig. 2, *M. ? latus*, Khasi Hills, p. 209, pl. liii, fig. 8. *M. hepatizon*, Habiang-Garo and Dafia Hills, p. 209, pl. liii, figs. 3 & 4, *M. subpetasus*, Dafia Hills, p. 210, pl. liii, fig. 6, n. spp.; GODWIN-AUSTEN (1). *M. fordiana*, *M. ? pseudaulopis*, *M. perinconspicua*, n. spp., Andaman I.; *id.* (2) pp. 56 & 57.

M. battimalvensis, n. sp., Battemalve I.; *id. t. c.* p. 58. *M. apex*, n. sp., Guangdong; MÖLLENDORFF, (4) p. 39. *M. subcarinata*, n. sp., Bulacan, Philippines; *id.* (5) p. 80.

M. (Macroceras) fasciata, n. sp., Bulacan; *id. ibid.*

Mariaella arayentensis, Semp., is a *Vitrinopsis*; *id.* (1) p. 117.

Mesolimax, n. g. Limaciform, foot with an oblique groove; shell with a central nucleus as in *Amalia*. Generative organs as in *Limax*; radula as in *Agriolimax* and *Malacolinax*; for *M. brauni*, n. sp., Asia Minor; POLLONERA, (2) p. 8, pl. ii, figs. 19-23.

Microcystina hochstetteri, n. sp., Nicobar Is.; GODWIN-AUSTEN, (2) p. 57.

Nanina laurentiana, n. sp., Hoopé; GREDLER, (1) p. 343. *N. fellea*, n. sp., China; HEUDE, p. 240. *N. blainvilliana* and allied forms critically discussed; MÖLLENDORFF, (1) p. 120. *N. vitrinoides* (Desh.), of Hidalgo (J. de Conch. 1887, p. 46), is a *Macrochlamys*; *id. t. c.* p. 117. *N. humphreysiana*, Lea, var. *complanata* of Hidalgo (J. de Conch. 1887, p. 51), is *Xesta mindunaensis*, Semp.; *id. t. c.* p. 122. *N. atropos*, Mafor; TAPPARONE-CANEFRI, p. 147.

Paralimax multirugatus, n. sp., Caucasus; BÖTTGER, (2) p. 149.

Parmacella valenciennesi, var. of; COCKERELL, T. D. A. (1).

Phaneroporus, n. g.; vas deferens devoid of calcareous sac; shell visible externally; for *P. reinhardti*, n. sp. (*sine descr.*), Ethiopian region; SIMROTH, (5) p. 88.

Pacilozonites, Böttger (*non* Sandberger), re-defined, 4 species diagnosed and figured, none new; PILSBRY (4).

Rhysota nigrescens, n. sp., Manila; MÖLLENDORFF, (5) p. 86.

Sitala trochulus, n. sp., Shoa; POLLONERA, (1) and (5) p. 62, pla. ii, fig. 32, & iii, figs. 19-21. *S. carnigera*, Ramoi, p. 152, *S. propinqua*, Mount Arfak, p. 153; TAPPARONE-CANEFRI.

Trichotoxon, n. g.; penis part of the vas deferens; two or three dart sacs, each with two permanent darts, provided with a bristly sheath of conchiolin; for *T. heynemanni*, and *T. martensi*, n. spp., Ethiopian region; SIMROTH, (5) p. 87.

Urocyclus. African slugs not of this genus, as maintained by Fischer; *id.* (3).

Vitrina licatæ, *V. ragazzii*, *V. bianchii*, *V. giuliettii*, *V. martinii*, *V. antonellii*, n. spp., Shoa; POLLONERA (1): also with figures; *id.* (5) pp. 56-60, pl. ii.

Vitrinopsis, catalogue of known species (6); MÖLLENDORFF, (3) pp. 153-155. *V. cebuana*, n. sp., Cebu; *id. t. c.* p. 152, pl. iv, fig. 10.

HELICIDÆ.

Acanthoptyx, n. g., for *Helix acanthinula*, Crosse, New Caledonia; ANCEY, (2) p. 370.

Allognathus, n. sect. *Pentatænia*, jaw devoid of strong ribs; for *H. grateloupi*, Graëlls; PILSBRY, (2) p. 149.

Atlantica, n. g., for *Helix semiplicata*, Pfeiffer; ANCEY, (3) p. 54.

Averellia, n. n. for *Celospira*, Ancey (*nec* Hall); *id.* (4).

Bathyazis, n. g., for *Callaxis layardi*, Ad. & Angas; *id. op. cit.* p. 39.

- Bermudia*, n. g., for *Helix bermudensis*, Pfeiffer; *id. op. cit.* p. 53.
Brazieria, n. g., for *H. velata*, Hombr. & Jacq.; *id. op. cit.* p. 22 [*cf.* p. 72, *postea*].
Bulimus proclivis, n. sp., Rio Grande; MARTENS, (5) p. 64. *B. exaratus* (Müll.) referred to *Perideris*, Shuttlew., on basis of anatomical characters; FURTADO. [*Cf.* p. 65, *postea*].
B. (Borus) iheringi, n. sp., Taguara, Brazil; CLESSIN, (6) p. 167.
B. (Rhinus) koseritzi, n. sp., Brazil; *id. t. c.* p. 168.
Calostrophæa, n. g., for *Helix raffrayi*, Tapparone-Canefri; ANCEY, (3) p. 38.
Cavicola, n. g., for *Streptaxis* (?) *cavicola*, Gredler; *id. t. c.* p. 39.
Charopa delta, Pfr., figured; HEDLEY.
Chloræa geotrochus, n. sp., Morong, Philippines; MÖLLENDORFF, (5) p. 89.
Chrysodon, n. g., for *Helix auridens*, Rang; ANCEY, (3) p. 54 [*nom. præocc.*].
Cochlostyla mainitensis, *C. luengoi*, *C. codonensis*, n. spp., Philippines; HIDALGO, (2) pp. 310-312. *C. hindei*, n. sp., New Ireland; COX, p. 1063, pl. xxi, figs. 1 & 2.
C. (Callicochlias) lignicolor, n. sp., Mindanao; MÖLLENDORFF, (5) p. 100.
C. (Corasia) carulea, n. sp., Manila; *id. t. c.* p. 97.
C. (Helicosstyla) bættgeriana, n. sp., Manila; *id. t. c.* p. 101.
Coliolus, n. sect. for *Helix arfakiensis*; TAPPARONE-CANEFRI, p. 131.
Crystallopsis, n. g., for *Helix hunteri* and *H. allasteri*, COX; ANCEY, (3) p. 22.
Dorcasia schadenbergi, n. sp., Ilocos, Philippines; MÖLLENDORFF, (6) p. 144.
Entodina, n. g., for *Helix reyrei*, Sowerby; ANCEY, (3) p. 64.
Eurystyla, n. g., for *Helix cerina*, Mor., and *H. viridis*, Desh.; *id. op. cit.* p. 39. [*Eurystylus* already used in *Hemiptera*.]
Hadra leonhardtii, *H. schmackeri*, Quangtung, p. 42, *H. granulifera*, Hubei, *H. nux*, Formosa, p. 43, n. spp.; MÖLLENDORFF (4).
Helix. TRYON (2) continues his review of *Helix* [*cf.* Zool. Rec. xxiv, Moll. p. 58] as follows:—VII. *Helicella* (secc. 2, *Xerophila*, with subsecc. *Candidula*, *Lemniscia*, *Xeroleuca*, *Turricula*, and *Cochlicella*; 3, *Ochthephila*, with subsecc. *Ochthephila*, *Geomitra*, *Heterostoma*, *Irus*, *Placentula*; 4, *Actinella*; 5, *Tectula*; 6, *Craspedaria*; 7, *Discula*; 8, *Callina*; 9, *Acusta*). VIII. *Plectotropis* (secc. 1, *Plectotropis*, with subsec. *Pseudiberus*; 2, *Aegista*; 3, *Trachia*, with subsec. *Angasella*). IX. *Arionta* (secc. 1, *Lysinoe*, with subsecc. *Helminthoglypta*, *Odontura*, *Leptarionta*, *Praticola*, *Micrarionta*, *Pæcilotola*, *Epiphragmophora*, *Eurycampta*; 2, *Campylea*, with subsecc. *Xerocampylea*, *Fruticocampylea*, *Eucampylea*, *Tacheocampylea*, *Pseudocampylea*, *Chilotrema*; 3, *Arionta*; 4, *Eurystoma*).
PILSBRY (2) continues thus:—X. *Pentatenuia* (secc. 1, *Tachea*; 2, *Eremina*; 3, *Macularia*; 4, *Allognathus*, n.; 5, *Hemicycla*; 6, *Plebicula*; 7, *Leptaxis*; 8, *Iberus*; 9, *Pomatia*).

Palæarctic Species.

Helix faustina and *H. rossmüssleri*, distinct species; BRANCSIK (1).
H. pomatia, var. *lednicensis*, n.; *id.* *H. spinelliana*, Poll.; *H. bilabiata*,

Olivi, referred to this; POLLONERA, (4) p. 12. *H. lineata*, Olivi, redescribed, and made to include *H. profuga*, auctt.; *id. t. c.* p. 13. *H. constricta*, notes on; FOLIN (4). *H. quimperiana*, notes on; *id.* (2). *H. raffrayana*, n. n., = *H. raffrayi*, Bourg. (nec Tapp.-Can.); COCKERELL, T. D. A. (3). *H. segalaunica*, p. 142, *H. lenticata*, p. 152, n. spp., Drome, France; SAYN. *H. bozalli*, Mindanao, *H. cyclostremoides*, M'tul, Marocco, n. spp.; SOWERBY, (1) pp. 211 & 212, pl. xi, figs. 13 & 14. *H. lobethana*, n. sp., Oran; KOBELT, (1) p. 46, pl. lxxxiv, figs. 468 & 469. *H. subjo-beana*, n. sp., Marocco; *id. t. c.* p. 47, pl. lxxxv, fig. 472. *H. bailloni*, n. sp., Oran; *id. t. c.* p. 48, pl. lxxxv, fig. 474. *H. denansi*, n. sp., hab. ?; *id. t. c.* p. 50, pl. lxxxvi, fig. 477. *H. ghasouana*, n. sp., Nemours, N. Africa; *id. t. c.* p. 50, pl. lxxxvi, fig. 478. *H. ponsonbyi*, Tangier, p. 57, *H. taniata*, Mogador, p. 58, *H. inversa*, Mauritania, p. 59, *H. hieri-contina*, Jericho, p. 60, *H. barmeyana*, Algeria, p. 61, *H. eminens*, Syra, p. 61, n. spp.; WESTERLUND. *H. barcinonensis*, type of a group including *H. barcinonensis*, Bgt., *H. pallaresica*, n. sp., *H. salvana*, n. sp., *H. chie*, n. sp., *H. moresi*, n. sp., and *H. iberica*, Ramb., all from Spain; SALVAÑA (1). *H. bolosi*, n. sp., Olot, Spain; *id.* (2) p. 100. *H. rufescens*, Pennant, critical study of group; n. spp. *H. celomphala* (= *H. caluta*, Charp., nec Studer), p. 352; *H. calatina* (= *Fruticicola rufescens*, var. *danubialis*, pars, Clessin), p. 355; *H. plebicola*, p. 366; LOCARD (3). *H. canina*, n. sp., Liban, Nahr-el-Kelb; ANCEY, (10) p. 188, fig. *H. caruana*, n. sp., Malta; KOBELT (10). *H. garcieri*, p. 27, *H. deschampiana*, p. 30, *H. molliniana*, p. 32, *H. sciaphila* (= *H. brocardiana*, Dutailly, sp. var.), p. 36, *H. montigena* (= *H. revelierei*, Kobelt, var.), p. 40, *H. donata*, p. 42, *H. faucicola*, p. 44, *H. arusalensis*, p. 47, n. spp., Corsica and Sardinia; HAGENMÜLLER. *H. nicolisiana*, p. 214, figs. 4-6, *H. bonaldai*, p. 216, figs. 7-9, N. Italy; ADAMI. *H. umbilicaria*, Olivi, has priority over *H. ammonis*, Schmidt; POLLONERA, (4) p. 11. *H. dinarica*, 18 species of the Alps, Dalmatia, &c., described in this series, in which the following names are new:—*H. dinarica*, p. 217, pl. ii, figs. 1-3, *H. kuzmici*, p. 219, pl. ii, figs. 4-6, *H. pellanica*, p. 222, pl. ii, figs. 7-9, *H. montenegrina*, p. 224, *H. adriatica*, p. 226, *H. bosnica*, p. 228, *H. tchernagorica*, p. 232, pl. iii, figs. 3 & 4, *H. diocletiana*, p. 234, *H. sabljari*, p. 237, pl. iv, figs. 1 & 2, *H. horatii*, p. 238, pl. iv, figs. 3 & 4, *H. biagioi*, p. 240, pl. iv, figs. 5 & 6, *H. brenoica*, p. 242, *H. daniloi*, p. 243; BOURGUIGNAT. *H. faberiana*, Setshuan, p. 39, *H. herziana*, Hainan, p. 41, n. spp.; MÖLLENDORFF (4). *H. esau*, *H. jacob*, *H. patungana*, n. spp., Hoopé; GREGLER, (1) pp. 346-348. *H. hænitana*, *H. samarella*, *H. subcincta*, *H. subgriseola*, *H. perceruginosa*, *H. mensalis*, *H. talifouensis*, *H. radulina*, *H. mimicula*, *H. subparasitica*, n. spp., China; HERDE, pp. 237-240. *H. amphiocora*, Tonkin, *H. mystagogu*, China, p. 73, *H. pantheia*, China, *H. ratheleti*, Owari, Japan, *H. merarcha*, Halong, Tonkin, p. 74, *H. ilopica*, *H. melanotrica*, Tonkin, p. 75, *H. dactica*, *H. baphica*, Tonkin, p. 76, n. spp.; MABILLE (1). *H. agla-meta*, *H. phryganophila*, p. 132, *H. nubivaga*, *H. evergusta*, p. 133, *H. thoryna*, *H. idiotrypa*, *H. helvia*, p. 134, *H. helyguia*, *H. idryta*, p. 135, *H. cardiobola*, *H. hedonica*, p. 136, Teneriffe, *H. thespesia*, p. 136, *H. helybia*, p. 137, Canaries, *H. ethelema*, p. 137, Gran Canaria, *H. perrieri*, *H. caroplata*,

H. callipona, p. 138, *H. verneai*, p. 139, Teneriffe, *H. psathyropsis*, p. 139, *H. empeda*, p. 140, Gran Canaria, *H. poirrieri*, *H. glyceia*, p. 140, Teneriffe, *H. evergeta*, p. 141, Gran Canaria, *H. ephora*, p. 141, Teneriffe, *H. ganoda*, p. 141, Gomera, *H. bathycoma*, *H. riprochi*, p. 142, Gran Canaria, *H. ophthalmorycha*, p. 143, Canaries, *H. carta*, p. 143, Gran Canaria, *H. chersa*, p. 144, Teneriffe, *H. thaumalea*, p. 144, Lanzerote, *H. hierophanta*, p. 145, Teneriffe, *H. paicanopsis*, p. 145, Gomera, *H. themera*, p. 145, Gran Canaria, *H. crypsidoma*, *H. embriha*, p. 146, Gran Canaria, *H. subgravida*, *H. everia*, p. 147, Teneriffe, n. spp.; *id.* (2)

H. (Acusta) cagoina, n. sp., Hoopé; GREDLER, (1) p. 349.

H. (Aegista) virilis, *H. (A.) laurentii*, n. spp., Hoopé; *id. t. c.* pp. 350 & 351.

H. (Fruticotrochus) sitalina, n. sp., Hoopé; *id. t. c.* p. 345.

H. (Hadra) vulpis, n. sp., Hoonan; *id. t. c.* p. 352.

H. (Macularia) codringtoni, Desh., numerous local variations from Greece described; BETTGER, (1) p. 51.

H. (Monacha) remirugosa, n. sp., Morocco; KOBELT, (1) p. 15, pl. xcv, fig. 529.

H. (Plectotropis) subconella, Quangtung, *H. (P.) lofouana*, Lofocshan, n. spp.; MÖLLENDORFF, (4) pp. 40 & 41.

H. (Trichia) chrysotricha, n. sp., Caucasus; BETTGER, (2) p. 151.

Palæotropical Oriental species:—

H. bulacanensis, n. sp., Philippines; HIDALGO, (2) p. 310. *H. scalatella*, n. sp., Manila; MÖLLENDORFF, (6) p. 145. *H. arfakiensis*, Mount Arfak, p. 131, *H. rhynchonella*, Giobi, p. 134; TAPPARONE-CANEVRI.

H. (Microcystis) subpatuloidea, n. sp., S. Andaman Is.; GODWIN-AUSTEN, (2) p. 58.

H. (Plectotropis) visayana, n. sp., (= *H. winteriana*, var. *minor*, Pfr.), Cebu; MÖLLENDORFF, (3) p. 157.

H. (Trachia) emensus, *H. (T.) clarus*, n. spp, Mandalay; GODWIN-AUSTEN, (3) p. 242.

Nearctic species:—

H. verrilli, n. sp., Mexico; ANCEY, (7) p. 63. *H. armigera*, n. sp.; *id. t. c.* p. 64. *H. commutanda*, n. n. for *Triodopsis harfordiana*, Binney (nec *Helix harfordiana*, Cooper); *id. t. c.* p. 79. *H. salmonensis*, Tryon, 1887, has precedence of this; PILSBRY (1).

H. (Mesodon) kiowäensis, n. sp., Indian Territory; SIMPSON, (9) p. 450.

Kaliella pseudositala, n. sp., Cebu; MÖLLENDORFF, (3) p. 151, pl. iv, fig. 12. *K. pusilla*, n. sp., Manila; *id.* (5) p. 81.

Lysinoe seriatipecta, n. sp., Cochiu Chiua; ROCHEBRUNE, (3) p. 69.

Möllendorffia, n. g., for *Helix trisinuata*, Mart., *H. hensaniana*, Gredler, *H. eastlakeana* [? *eastlakeana*], Möllendorff; ANCEY, (3) p. 64.

Nesobia, n. g., for *Bulinus helenae*, Q. & G.; *id. op. cit.* p. 39.

Obolus kochiana, n. sp., Cebu; MÖLLENDORFF, (5) p. 88.

Oligospira, n. g., for *H. walloni* and *H. skinneri*, Reeve ; ANCEY, (3) p. 22.

Ophiospila, n. g., for *Helix kuhni*, Pfeiffer, *H. andicola*, Pfeiffer, &c. ; *id. op. cit.* p. 64.

Patula aperta, n. sp., Manila ; MÖLLENDORFF, (5) p. 89.

Pilsbrya, n. n. for *Pæcilocostola*, Ancey (*nec auctt.*) ; ANCEY, (4).

Plectopylis villedaryi, n. sp., Tonkin ; *id.* (8) p. 71, fig. 2.

Pleurozia, n. n. for *Angasella*, type *Helix cyrtopleura*, Pfr. ; *id.* (3) p. 38.

Pristiloma, n. n. for *Pristina*, Anc., 1886, = *Anceya*, Pilsbry (*nec Bgt.*) ; *id.* (4).

Ptychostylus, n. sect. *Cochlostylæ*. "T. globosa turbinata, multispira, anfractus sensim accrescentes, ultimus sat angustus, apertura coarctata, columella valde spiraliter torta, plico valida munita" : for *O. cepoides* (Lea) ; MÖLLENDORFF, (5) p. 74. [*Ptychostylis* already used in *Moll.*]

Rhyssolina, n. g., for *Helix welartschi*, Mor., and *H. hepatizon*, Gould ; ANCEY, (3) p. 53.

Rhyssotopsis, n. g., for *Helix haughtoni*, Benson ; *id. t. c.* p. 64.

Sheldonia, n. g., for *Helix trotteriana*, Bena., *H. phytostylus*, Bens., and *H. natalensis*, Pfeiffer ; *id. t. c.* p. 53.

Sphincterochila, n. g., for *Helix filia*, Mouss., and *H. boissieri*, Charp. ; *id. t. c.* p. 23.

Tetrodontina, n. g., for *Helix yunkaiensis*, *H. tetrodon*, and *H. houaiensis* ; *id. t. c.* p. 64.

Thersites richmondiana, Pfr., figured ; HEDLEY.

Traumatophora, n. g., for *Helix trisculptu*, v. Martens ; ANCEY, (3) p. 54.

Trichelix, n. g., for *Helix horrida*, Pfeiffer ; *id. t. c.* p. 64.

Trochomorpha rufa, Luzon, *T. granulosa*, Siquijor, n. spp. ; MÖLLENDORFF, (6) p. 144. *T. borealis*, n. sp., Setshuan ; *id.* (4) p. 39. *T. morio*, Giobi ; TAPPARONE-CANEVRI, p. 126 *bis*. *T. rubens*, n. sp., New Hebrides ; HARTMAN, (3) p. 251, pl. xiii, fig. 5.

Xerophila antoniana, n. sp., Cape Verd Is. ; ROCHEBRUNE, (1) p. 31.

BULIMULIDÆ.

Amphibulima imbricata, n. sp., Cochin China ; ROCHEBRUNE, (3) p. 72.

Amphidromus perrieri, *A. nigropilosus*, and *A. hemicyclus*, n. spp., Cochin China ; *id. t. c.* pp. 71, 72, & 117.

Bocourtia, n. g., for *B. gymneiformis* and *B. fasciata*, n. spp., Cochin China ; *id. t. c.* pp. 117 & 118.

Partula aurantiana, p. 250, pl. xiii, fig. 1, *P. carnicolor*, *ibid.*, fig. 2, *P. fraterna*, *ibid.*, fig. 3, *P. albescens*, p. 251, fig. 4, n. spp., New Hebrides ; HARTMAN (3).

CYLINDRELLIDÆ.

Cylindrella strohmi, *O. dohrni*, n. spp., Haiti ; MALTZAN, (1) p. 177.

Macroceramus costatus, *M. nitidulus*, n. spp., Haiti ; *id. t. c.* p. 178.

PUPIDÆ.

Angustula, n. subg. *Pupa*, for *P. venetii*, Charp., and *P. milium*, Gld.; STERKI, (4) p. 378, pl. xlii, figs. 10-13.

Buliminus aristidis, *B. lecouffei*, n. spp., Tunis; ANCEY, (10) p. 189. *B. daucopsis*, *B. imbricatus*, *B. gossypinus*, n. spp., China; HEUDE, pp. 240 & 241. *B. trivialis*, *B. transiens*, *B. hartmani*, n. spp., China; ANCEY, (2) pp. 346-348. *B. vignonii*, *B. sacconi*, *B. scioanus*, *B. meneliki*, n. spp., Shoa; POLLONERA, (1) and (5) pp. 65-69, pl. iii. *B. antinorii*, Poll., 1887, redescrbed with figures; *id. t. c.* p. 68, pl. iii, figs. 4-6.

B. (Ena) krueperi, n. sp., Mt. Veluchi, Greece; BÆTTGER, (1) p. 54.

B. (Rachis) chalcidonicus, n. sp., Hoopé; GREDLER, (1) p. 384.

B. (Subzebrinus) alaicus, n. sp., Turkestan; KOBELT, (1) p. 39, pl. c, fig. 579.

Clausilia. Swiss and Austro-Hungarian forms described; CLESSIN (1). *C. laura*, n. sp., Apulia; ADAMI, p. 223, figs. 10-12. *C. pauli*, redescrbed with notes; FOLIN (3). *C. julii*, p. 355, *C. moschina*, p. 358, *C. provisoria*, p. 360, n. spp., Quangtung and Hoopé; GREDLER (1). *C. ptychodon*, n. sp., China?; ANCEY, (2) p. 353. *C. lunatica*, *C. phyllostoma*, *C. meroniana*, *C. pagnucciana*, n. spp., China; HEUDE, pp. 235-237.

C. (Euzina) climax, n. sp., Batoum; BÆTTGER, (2) p. 153. *C. (E.) novorossica*, n. sp., Caucasus; RETOWSKY, p. 284.

C. (Hemiphadusa) hupecola, *C. (H.) cavicola*, n. spp., Hoopé; GREDLER, (1) pp. 359 & 360.

C. (Micropontica) circassica, *C. (M.) retowskii*, n. spp., Caucasus; BÆTTGER, (2) p. 154.

C. (Pseudonenia) coccygea, n. sp., Hoopé; GREDLER, (1) p. 356. *C. (P.) shanica*, n. sp., Shan Hills; GODWIN-AUSTEN, (3) p. 244.

C. (Papillifera) parnassia, n. sp., Mt. Parnassus; BÆTTGER, (1) p. 54.

Euzinastra, n. sect. of *Clausilia*, with deeply excavated clausilium, as in *Clausiliastra*, shell as in *Euzina*, and differing from *Mantissa* in absence of palatal fold; for *C. (E.) hamata*, n. sp., Batoum; *id.* (2) p. 152.

Funiculus, n. g. "Spira subcylindrica, anfractibus vix obliquis, numerosis, subæqualibus;" for *Buliminus delavayanus*, Heude, and *F. probatus*, *F. asbestinus*, *F. coriaceus*, *F. debilis*, and *F. rudens*, n. spp., China; HEUDE, pp. 241 & 242 [Nom. preocc.].

Hypselostoma luzonicum, n. sp., Manila; MÖLLENDORFF, (6) p. 145.

Petræus chaudiensis, *P. vignei*, n. spp., Cochinchina; ROCHEBRUNE, (3) p. 70.

Pupa frumentum is the *Turbo multidentatus* of Olivi; POLLONERA, (4) p. 10. *P. candida* referred to *Earyptyrus*, on the base of a dentiform fold on the columella; FISCHER (6). *P. damarica*, Damara, *P. glauvilliana*, Cape Colony, n. spp.; ANCEY, (10) p. 200.

Pupisoma philippinicum, n. sp., Manila; MÖLLENDORFF, (5) p. 108.

Vertigo tumida, West., reduced to var. of *V. pusilla*, Müll.; TAYLOR (6). Notes on N. American forms: STERKI (4).

STENOGYRIDÆ.

Achatina bayoli, n. sp., Assinie ; MORELET.

Achatinella. Catalogue of the known species, arranged in the following sections :—*A. Partulina*, 21 spp., *Bulimella*, 25 spp., *Achatinellastrum*, 27 spp. (*A. nattii*, n. sp., Sandwich Is., p. 34, pl. i, fig. 3), *Eburnella*, 9 spp., *Apex*, 15 spp., *Perdicella*, 5 spp., *Newcombia*, 6 spp., *Labiella*, 3 spp., *Laminella*, 16 spp., *Amastra*, 60 spp. (*A. uniplicata*, n. sp., Sandwich Is., p. 50, pl. i, fig. 7), *Carinella*, 2 n. spp. *Leptachatina*, 46 spp. (*L. coruscans*, p. 52, pl. i, fig. 16, *L. saccula*, p. 55, pl. i, fig. 15, n. spp., Sandwich Is.) ; HARTMAN, (2) pl. i, fig. 15. *Amastra simularis*, n. sp., Sandwich Is.; *id.* (3) p. 252, pl. xiii, fig. 7.

Atopocochlis, n. subg. of *Perideris*, for *Bulimus exaratus* (Müll.) ; CROSSE & FISCHER.

Cœcilianella advena, n. sp., Damara ; ANCEY, (10) p. 215.

Ferussacia marginata, n. sp., Algeria ; WESTERLUND, p. 63.

Homorus massonianus, n. sp., Sau Thomé ; CROSSE, (1) p. 22, pl. i, fig. 3.

Limicolaria prateata, n. sp., Cameroons ; MARTENS, (6) p. 148.

Stenogyra quadrasi, *S. semperi*, n. spp., Philippines ; HIDALGO, (1) pp. 35 & 36, pl. vi, figs. 2 & 3.

HELICTERIDÆ.

Tornatellina kochiana, n. sp., Cebu ; MÖLLENDORFF, (3) p. 163, pl. iv, fig. 11.

SUCCINEIDÆ.

Succinea obliqua, Say, conspecific with *S. totteniana*, Lea ; FORD (2).

VAGINULIDÆ.

Veronicella chaudiensis, *V. titanotona*, *V. bocourti*, n. spp., Cochin China ; ROCHEBRUNE, (3) pp. 67, 68, & 117.

ONCHIDIIDÆ.

Onchidella condoriana, n. sp., Cochin China ; ROCHEBRUNE, (3) p. 67.

Onchidium harmandianum, n. sp., Cochin China ; *id. ibid.*

O. (Onchidiella) trans-atlanticum, n. sp., Bermuda ; HEILPRIN, (2) p. 327, pl. xvi, fig. 4.

BASOMMATOPHORA.

GEHYDROPHILA.

AURICULIDÆ.

Auriculella, catalogue of species, 22 recognized ; HARTMAN (1).

Carychium minusculum, n. sp., Hoopé ; GREDLER, (1) p. 362.

Cassidula quadrasi, *C. philippinarum*, n. spp., Philippines ; HIDALGO, (1) pp. 51 & 53, pl. vi, figs. 6 & 7.

Pythia proxima, Tangion, p. 158, *P. latidentata*, Katan, p. 160, *P. obscura*, Mafor, p. 163; TAPPARONE-CANEFRI.

HYGROPHILA.

LIMNÆIDÆ.

Ancylus vicina, Great Lake, Tasmania; PETTERD, (2) p. 40.

Gundlachia beddomei, Brown's River Road Pool, Tasmania; *id. t. c.* p. 41.

Limnaea. 20 spp. from near Hamburg, the following n. spp.:—*L. bernardiana*, p. 291, *L. neldyana*, p. 293; SERVAIN (2). *L. mamillata*, n. sp., Biarritz; *id. t. c.* p. 292. *L. gunnii*, p. 7, pl. ii, fig. 10, *L. lutosa*, p. 8, pl. ii, fig. 13, Tasmania, n. spp.; PETTERD (1).

Planorbis hypocyrtus, n. sp., Hamburg; SERVAIN (2), p. 299, pl. viii, figs. 6-9. *P. umbilicatellus*, n. n., for *P. umbilicatus*, Taylor (*nec* Müller); COCKERELL, T. D. A. (2). *P. confusus*, n. n., = *P. compressus*, Hutton (*nec* Michaud); *P. pierrei*, n. sp., Cochinchina; ROCHEBRUNE, (3) p. 66. *P. stanleyi*, n. sp., Albert Nyanza; SMITH, (10) p. 55. *P. jenkinsii*, n. sp., Rhode I.; CARPENTER, p. 2.

Thompsonia, Ancey, should be termed *Planorbis scalaris*; PILSBRY (3).

CHILINIDÆ.

Chilina. List of known species; SMITH (8).

THALASSOPHILA.

GADINIIDÆ.

Gadinea petasus, n. sp., Cape Verd Is.; ROCHEBRUNE, (1) p. 29.

NUDIBRANCHIATA.

KLADOHEPATICA.

PHYLLOBRANCHIDÆ.

Cyerce paronina, n. sp., Mauritius; BERGH, (1) p. 764, pl. lxxvii, figs. 3-5, pls. lxxviii, figs. 10-18, & lxxix, figs. 22-25.

HERMÆIDÆ.

Hermeca minor, n. sp., Mauritius; BERGH, (1) p. 774, pls. xxviii, figs. 4-7, & lxxix, fig. 21.

PLAKOBRANCHIDÆ.

Plakobrancheus virgatus, p. 758, pls. lxxvii, fig. 8, & lxxviii, figs. 20-22; *P. ? moebii*, p. 759, pl. lxxviii, fig. 19, n. spp., Mauritius; BERGH (1).

ÆOLIDIADÆ.

Æolidiella indica, n. sp., Mauritius; *id. t. c.* p. 781, pl. lxxviii, figs. 1 & 2. *Æ. orientalis*, n. sp., Indian Ocean; *id. t. c.* p. 673, pl. xvi, figs. 8-13.

Bæolidia, n. g. "Forma corporis minus depressa quam in *Aeolidiis* propriis; rhinophoria annulata moriformia, tentacula digitiformia; papillæ dorsales non numerosæ, compressæ, sat breves; margo anterior podarii profunde sulcatus, angulis fortiter productis. Penis inermis. Mandibulæ applanatæ; margo masticatorius sublævis. Radula uniseriata, dentibus simpliciter pectinatis;" for *B. moebii*, n. sp., Mauritius; *id. t. c.* p. 777, pls. lxxix, figs. 10-16, & lxxx, figs. 1-4.

Caloria, n. g.; TRINCHESE.

Coryphella berghi, n. sp., Mediterranean; VAYSSIÈRE, (3) p. 128, pl. vii, figs. 4 & 5.

Facalana, n. g. "Forma corporis fere ut in *Facelinis*, elongata, gracilis; tentacula elongata, rhinophoria perfoliata; papillæ dorsales sat facile caducæ, elongatæ, teretes, ut plurimum pulvinaribus hipposiphoniformibus insertæ; podarium antice angulis tentaculatim productis. Mandibulæ fere ut in *Glaucis*, lamina horizontali supera, convexitate superiore et breviori, convexitate inferiori et longiori; margo masticatorius serie denticulorum minorum armatus. Radula non paucidentata; dentibus uniseriatis, cuspidatis, denticulatis. Glans penis foliacea, margine glandulis majoribus peculiaribus armata;" for *F. pallida*, n. sp., Mauritius; BERGH, (1) p. 784, pls. lxxviii, fig. 3. & lxxix, figs. 1-3.

Facelina marioni, n. sp., Mediterranean; VAYSSIÈRE, (3) p. 126, pl. vii, figs. 1-3.

Fenrisia, n. g. "Forma corporis subelongata; rhinophoria, lateralia, perfoliata; tentacula nulla; papillæ dorsales pedamentis humilibus impositæ, non caducæ; podarium sat latum, margine antico sulco exaratum et angulis tentaculatim productis. Margo masticatorius mandibularum lævis. Radula dentibus uniseriatis paucis; dentes depressi, acie pectiniformi, denticulis longioribus iterum denticulatis. Glandulæ ptyalinæ. Penis inermis;" for *F. moebii*, n. sp., Mauritius; BERGH (1) p. 788, pls. lxxvii, fig. 1, lxxix, figs. 17-20, & lxxx, figs. 5-12.

Hero redefined and placed among the *Æolidiæ*; VAYSSIÈRE (2).

Hervia rosea, n. sp., Indian Ocean; BERGH, (2) p. 677, pls. xvi, figs. 1-7, & xvii, figs. 1-3.

Moridilla, n. g. "Corpus gracilius, elongatum, subcompressum; rhinophoria quasi moriformia; tentacula sat elongata. Papillæ (dorsales) vix caducæ, elongatæ; seriebus obliquis dispositæ, antice areis confertæ. Podarium sat angustum, antice angulis tentaculatum productis. Mandibulæ non elongatæ; processus masticatorius nonnihil curvatus, sine denticulorum grossiorum singula. Dentes linguæ uniseriati, fere ut in *Facelinis*. Penis inermis;" for *M. brockii*, n. sp., Indian Ocean; *id. t. c.* p. 680, pls. xvii, figs. 4 & 5, & xviii, figs. 1-5.

DOTONIDÆ.

Summary of family, which contains the genera *Doto*, *Dotilla*, *Gellina*, *Cæcinella*, and *Heromorpha*; BERGH (1).

Doto indica, n. sp., Mauritius; *id.* (1) p. 795, pl. lxxviii, figs. 23-27.

MELIBICIDÆ.

Melibe ocellata, n. sp., Indian Ocean; BERGH, (2) p. 689, pls. xvii, figs. 13 & 14, & xix, figs. 3-7.

PLEUROLEURIDÆ.

Family redefined (p. 352); it contains only one genus:—

Pleuroleura, Bgh., to which the following 5 species are referred: *P. ornata*, Bgh., *P. fortunata*, n. sp., Indian Ocean, p. 353, pls. x & xi, figs. 1-9, *P. pustulosa* (v. Hass.), *P. gonatophora* (v. Hass.), *P. striata* (v. Hass.); the whole animal or characteristic organs of each are figured; BERGH (3).

TRITONIDÆ.

Candiella dubia, n. sp., Mauritius; BERGH, (1) p. 797, pl. lxxx, figs. 13-21.

HOLOHEPATICA.

DORIDIDÆ.

Asteronotus harmandi, n. sp., Cochin China; ROCHEBRUNE, (3) p. 50.

Baptodoris tuberculata, n. sp., Mauritius; BERGH, (1) p. 812, pl. lxxxiv, figs. 1-4.

Chromodoris zebra, n. sp., Bermuda; HEILPRIN, (2) p. 327, pl. xvi, fig. 3.

Discodoris cærulescens, n. sp., Mauritius; BERGH (1) p. 805, pl. lxxxiii, figs. 6-12. *D. concinniformis*, n. sp., Mauritius; *id. t. c.* p. 807, pl. lxxxiii, figs. 1-5.

Peltodoris sauvagei, n. sp., Cape Verd Is.; ROCHEBRUNE, (1) p. 28.

TECTIBRANCHIATA.

DORIDIIDÆ.

Posterobranchus orbignyanus, n. sp., Cape Verd Is.; ROCHEBRUNE, (1) p. 28.

APLYSIIDÆ.

Aplysia aquorea, n. sp., Bermuda; HEILPRIN, (2) p. 325, pl. xvi, fig. 2.

HETEROPODA.

A synonymic catalogue, with bibliography and full references, is given, the arrangement being as follows:—

1. *Pterotracheida*, with genera *Pterotrachea* (16 species), *Firoloida* (7 species), *Cardiopoda* (4 species), *Carinariia* (11 species).

2. *Atlantida*, with genera *Atlanta* (19 species), *Oxygyrus* (2 species); SMITH (1).

PTEROTRACHEIDÆ.

Pterotrachea sp., Banda, described and figured; SMITH, (1) p. 19, fig. 1.

Cardiopoda placenta (Less.), figured; *id. t. c.* p. 26, fig. 2.

Ourinaria cristata (L.), animal and shell figured; *id. t. c.* p. 31, figs. 3 & 4. *Carinaria* sp., N. Atlantic; *id. t. c.* p. 37, fig. 5.

PROSOBRANCHIATA.

PECTINIBRANCHIATA.

TOXOGLOSSA.

CONIDÆ.

Lienardia obockiensis, n. sp., Red Sea; JOUSSEAUME, p. 183.

Pleurotoma fultoni, Port Elizabeth, *P. bulowi*, China Sea, n. spp.; SOWERBY, (1) pp. 210 & 211, pl. xi, figs. 17 & 16.

P. (Bela ?) incondita, hab. ?; SMITH, (4) p. 316.

P. (Drillia) unifasciata, Ceylon and China Sea, *P. (D.) crassa*, Bombay, *P. (D.) roseobasis*, hab. ?, *P. (D.) ventricosa*, Queensland, *P. (D.) granularis*, hab. ?, *P. (D.) rimata*, hab. ?, *P. (D.) essingtoniensis*, Port Essington, Australia, *P. (D.) parva*, Gulf of Suez, *P. (D.) jucunda*, hab. ?, *P. (D.) consanguinea*, hab. ?, *P. (D.) rubro-fusca*, China Sea, *P. (D.) bilirata*, hab. ?, *P. (D.) suavis*, Cape Three Points, off Sydney, *P. (D.) cretata*, Panama, *P. (D.) multicostellata*, Philippines, *P. (D.) fijiensis*, Ovalau, Fiji, *P. (D.) dejecta*, Philippines, *P. (D.) semipellucida*, hab. ?, *P. (D.) persica*, Persian Gulf, *P. (D.) paucistriata*, California, *P. (D.) disjecta*, Persian Gulf, China Sea, and Ovalau, *P. (D.) cookei*, Jamaica, n. spp.; *id. t. c.* pp. 300-308.

P. (Clathurella) scabrata, hab. ?, *P. (C.) crassilirata*, hab. ?, *P. (C.) pachychila*, hab. ?, *P. (C.) munda*, Persian Gulf, China Sea, n. spp.; *id. t. c.* pp. 314-316.

P. (Crassispira) bifurca, n. sp., hab. ?; *id. t. c.* p. 308.

P. (Mangilia) fulgens, hab. ?, *P. (M.) notabilis*, hab. ?, *P. (M. ?) recta*, Persian Gulf, *P. (M.) fordii*, hab. ?, *P. (M.) parilis*, California, *P. (M.) lata*, China Sea, *P. (M.) decipiens*, hab. ?, *P. (M.) lischkei*, Japan, *P. (M.) castellata*, hab. ?, *P. (M.) fortistriata*, Bombay, *P. (M.) mamillata*, hab. ?, *P. (M.) subquadrata*, St. Helena, *P. (M. ?) granilirata*, hab. ?, n. spp.; *id. t. c.* pp. 309-314.

P. (Surcula) fuegiensis, n. sp., Magellans Strait; *id. t. c.* p. 300.

P. (—) contempta, n. sp., hab. ?; *id. t. c.* p. 316.

RHACHIGLOSSA.

MARGINELLIDÆ.

Gibberula jousseaumi, n. sp., Cape Verd Is.; ROCHEBRUNE, (1) p. 30.

Volvarina cessaci, n. sp., Cape Verd Is.; *id. ibid.*

HALIIDÆ.

Italia priamus figured, and placed near *Volutomitra*; KOBELT, (2) p. 5, pl. xxx, figs. 1-5.

MITRIDÆ.

Conimitra, Conrad, hitherto known as a fossil, living in Antilles; DALL, (3) p. 9.

Mitra marionæ, hab. ?, p. 281, *M. ærumnosa*, Algoa Bay, *M. astyridiformis*, hab. ?, p. 282, *M. calozesta*, Andaman Is., *M. chariessa*, hab. ?, *M. transenna*, E. Indies, p. 283, *M. sybillæ*, Andaman Is., *M. perenodictya*, Philippines ?, p. 284, *M. cerithina*, *M. bela*, hab. ?, p. 285, *M. tensa*, hab. ?, *M. abacophora*, hab. ?, *M. rhodinosphæra*, Mauritius, p. 286, *M. zythochroa*, hab. ?, *M. fulvosulcata*, Mauritius, p. 287, all figured; MELVILL (2). *M. tankervillei*, n. n., = *M. rugosa*, Swainson (*nec* Gm.); validity of the species maintained against Tryon; *id.* (5).

TURBINELLIDÆ.

Melongena melongena, L., from Caribbean region; DOLLFUS.

BUCCINIDÆ.

Concholepas: detailed anatomy, on the basis of which it is placed in the present family; HALLER.

Engina angulata, n. sp., Hong Kong; SOWERBY, (1) p. 210, pl. xi, fig. 10.

Lacheis, Risso, to be replaced by *Donovania*, Bucq., Dautz., & Dollf., 1882; referred to this family, and not to *Pleurotomidæ* (as Woodward and others), nor to *Muricidæ* (as Jeffreys); FISCHER (3).

Siphonalia mikado, *S. pseudo-buccinum*, n. spp., Japan; MELVILL (6).

Tritonidea rufina, n. sp., Red Sea; JOUSSEAUME, p. 178.

NASSIDÆ.

Canidia harmandiana, *C. stomatodontu*, n. spp., Cochin China; ROCHEBRUNE, (3) pp. 60 & 61.

Phrontis obockensis, n. sp., Red Sea; JOUSSEAUME, p. 184.

Tritia fauroti, n. sp., Red Sea; *id. t. c.* p. 186.

COLUMBELLIDÆ.

Atilia fauroti, n. sp., Red Sea; *id. t. c.* p. 177.

Columbella filbyi, n. sp., South Sea?; SOWERBY, (1) p. 208, pl. xi, figs. 8 & 9.

MURICIDÆ.

Homalocantha fauroti, n. sp., Red Sea; JOUSSEAUME, p. 180.

Ocenebra michaeli, n. sp., California; FORD (5).

Purpura: many detailed criticisms of Tryon's monograph; COOKE (2).

CORALLIOPHILIDÆ.

Coralliophila turrita, n. sp., Mauritius ; SOWERBY, (1) p. 209, pl. xi, fig. 11.

TÆNIOGLOSSA.

CASSIDIDÆ.

Cassus cernica, n. sp., Mauritius ; SOWERBY, (1) p. 211, pl. xi, fig. 19.
Faurotis, n. g., distinguished from *Semicassis* by crenulations on the columellar lip ; for *F. faurotis*, n. sp., Red Sea ; JOUSSEAUME, p. 188.

CYPRÆIDÆ.

Cypræa. History, distribution, and characters of the genus, with notes on rare and unique forms, and catalogue of 189 known species ; many new varieties and the following new species—*C. caput draconis*, Hong Kong, p. 33, figs. 1 & 1a, *C. amphithales*, Port Elizabeth, p. 40, fig. 19 ; MELVILL (7). *C. rashleighana*, n. sp., hab. ? ; *id.* (3). *C. bregeriana*, Crosse, justified ; SMITH (6). *C. hungerfordi*, n. sp., Japan ? ; SOWERBY, (1) p. 208, pl. xi, figs. 1–3.

Erato prayensis, n. sp., Cape Verd Is. ; ROCHEBRUNE, (1) p. 30.

CERITHIIDÆ.

Cerithium : 16 species described and figured, none new ; KOBELT (4).
Olypeomorus, n. g., with shell rather short, squat, tuberculate on the surfaces, with short canal and retracted columella ; for *O. clypeomorus*, n. sp., &c., Red Sea ; JOUSSEAUME, p. 172.

TURRITELLIDÆ.

Turritella robusta, n. sp., hab. ? ; SOWERBY, (1) p. 211, pl. xi, fig. 18.

MELANIIDÆ.

Melania pacificans, *M. aristarchorum*, p. 305, *M. tetriz*, *M. leprosa*, *M. telonaria*, p. 306, *M. theæpetes*, *M. oreadarum*, *M. resinacea*, *M. friniana*, p. 307, *M. toucheana*, *M. aubryana*, *M. soriniana*, p. 308, *M. delavayana*, *M. erythrozona*, p. 309, China ; HEUDE. *M. ecostata*, n. sp., China ; ANCEY, (2) p. 355. *M. liricincta*, n. sp., Albert Nyanza ; SMITH, (10) p. 52, fig. 1. *M. sancti-pauli*, p. 248, pl. x, fig. 2, *M. liberiensis*, p. 248, pl. x, figs. 3 & 4, *M. büttikoferi*, p. 249, pl. x, fig. 5, n. spp., Liberia ; SCHEPMAN (1). *M. abberans*, n. sp., New Hebrides ; HARTMAN, (3) p. 252, pl. xiii, fig. 8 [= *M. costata*, Q. & G.—HARTMAN in litt.—REC.].

LITTORINIDÆ.

Lacuna bourguignati, n. sp., Cape Verd Is. ; ROCHEBRUNE, (1) p. 30.

HYDROBIIDÆ.

Amnicola alsterica, pl. viii, fig. 11, *A. hochburica*, pl. viii, fig. 10, *A. mulierum*, pl. viii, fig. 12, n. spp., Hamburg; SERVAIN, (2) pp. 306 & 307.

Beddomeia, n. subg. of *Potamopyrgus*, for *Amnicola launcestonensis*, Johnst., p. 15, pl. i, fig. 2, and *B. belli*, p. 16, pl. i, fig. 7, *B. lodderæ*, p. 16, pl. iii, fig. 1, *B. hulli*, p. 17, pl. i, fig. 8, Tasmania, n. spp.; PETTERD (1) [*Nom. præocc.*].

Brazieria, n. g., for *Ampullaria tasmanica*, Ten.-Woods; *id. t. c.* p. 17, pl. i, fig. 1 [*cf.* p. 60, *antea*].

Bythinella clessini, n. sp., Moravia; RZEHA, p. 95, fig. 3.

Bythinia tentaculata, monstrous form; SMITH (7). *B. ammaëcia*, n. sp., Hamburg; SERVAIN, (1) p. 304. *B. grandis*, p. 132, pl. iv, fig. 1, *B. fuchsiana*, p. 134, pl. iv, fig. 2, n. spp., Hunan; MÖLLENDORFF (2). *B. minutoides*, Gredl., 1885, is a *Hydrobia*; *id. t. c.* p. 139. *B. alberti*, *B. walteri*, n. spp., Albert Nyanza; SMITH, (10) p. 54, fig. 3.

Fossarulus sinensis, Neum., redescribed and figured; MÖLLENDORFF, (2) p. 136, pl. iv, fig. 3.

Hydrobia ? *evanescens*, n. sp., Azores; GUERNE, (1) p. 39, figs. 1 & 2. *H. turbinata*, n. sp., Tasmania; PETTERD, (1) p. 18, pl. ii, fig. 3.

Lithoglyphus viridulus, n. sp., Hunan; MÖLLENDORFF, (2) p. 141, pl. iv, fig. 6.

Lyogyrus, Gill, is allied to *Amnicola*; PILSBRY (3). *L. lehnerti*, n. sp., Washington, D. C.; ANCEY, (7) p. 79.

Potamopyrgus woodsii, p. 12, pl. i, fig. 12, *P. smithi*, p. 13, pl. i, fig. 10, *P. brownii*, p. 13, pl. iii, fig. 14, *P. (?) marginata*, p. 14, [pl. i, fig. 9, n. spp., Tasmania; PETTERD (1).

Prosothenia schmackeri, n. sp., Shanghai; MÖLLENDORFF, (2) p. 143, pl. iv, fig. 4.

Pyrgophorus, n. sect. of *Pyrgulopsis*; ANCEY, (1) pp. 187 & 192.

Pyrgulopsis. Genus divided into a typical and Rythiniform series (n. subg. *Pyrgophorus*); the following are regarded as new species—*P. nicaraguanus*, Nicaragua, p. 194, *P. coronatus*, Vera Cruz, p. 197, *P. wrighti*, Coatlépeque, p. 199, *P. hydrobioides*, Coatlépeque, p. 201; *id. t. c.*

PALUDINIDÆ.

Campeloma: full account of anatomy, with figures; CALL (2).

Cleopatra emini, n. sp., Albert Nyanza; SMITH, (10) p. 54, fig. 2.

Paludina liberiana, n. sp., Liberia; SCHEPMAN, (1) p. 247, pl. x, fig. 1. *P. semmelinki*, n. sp., Borneo; *id.* (2). *P. diluviana*, *vide* p. 53, *antea*.

Vivipara duponti, n. sp., Senegal; ROCHEBRUNE, (2) p. 34.

VALVATIDÆ.

Valvata mergella, Westerlund, 1887, = *V. sincera*, Say; PILSBRY (3).

ASSIMINEIDÆ.

Assiminea bicincta, n. sp., Tasmania; PETTERD, (1) p. 18, pl. ii, fig. 4.

CYCLOPHORIDÆ.

The operculate land-shells do not form a single group, but several different families have given off branches in this direction; KOBELT (6).

Amphicyclotus, redefined; FISCHER & CROSSE, p. 137.

Alycaeus helicodes, n. sp., Hunan; GREDLER, (1) p. 365. *A. spratti*, n. sp., Shan Hills; GODWIN-AUSTEN, (3) p. 245.

Cataulus cochinchinensis, n. sp., Cochin China; ROCHEBRUNE, (3) p. 62.

Cyathopoma meridionale, n. sp., Cebu; MÖLLENDORFF, (3) p. 146, pl. iv, fig. 7.

Cyclophorus daraganicus, p. 68, pl. iv, fig. 2, *C. benguetensis*, p. 69, pl. iv, fig. 3, *C. quadrasi*, p. 70, pl. iv, fig. 4, *C. prietoi*, p. 71, pl. iv, fig. 5, *C. fernandesi*, p. 72, pl. iv, fig. 6, *C. bustoi*, p. 78, pl. v, fig. 4, n. spp., *C. sowerbyi*, n. n., p. 80, Philippines; HIDALGO (1). *C. coopertus*, n. sp., China; HEUDE, p. 243. *C. crassalabella*, n. sp., Shan Hills; GODWIN-AUSTEN, (3) p. 244. *C. theodori*, p. 92, fig. 4, *C. courbeti*, p. 93, fig. 8, n. spp., Tonkin; ANCEY (8). *C. seriatus*, n. sp., Celebes; *id.* (10) p. 215. *C. vandellii*, Nobre, figured; CROSSE, (1) p. 27, pl. i, fig. 2.

Cyclotus acanthoderma, Ramoi, p. 166, *C. tunicatus*, Mt. Arfak, p. 167; TAPPARONE-CANEFRI. *C. (? an n. g.) martensi*, n. sp., Haiti; MALTZAN, (1) p. 179.

Diplommata gracilis, n. sp., Cebu; MÖLLENDORFF, (3) p. 148, pl. iv, fig. 9. *D. schmackeri*, n. sp., Quangtung; *id.* (4) p. 38. *D. tablasensis*, n. sp., Philippines; HIDALGO, (1) p. 62, pl. v, fig. 7. *D. inermis*, *D. cristata*, *D. futilis*, n. spp., Hoopé; GREDLER, (1) pp. 366, 367, & 368. *D. schadenbergi*, n. sp., Luzon; MÖLLENDORFF, (6) p. 141.

D. (Sinica) palatalis, n. sp., Morong, Philippines; *id. ibid.* *D. (S.) fimbriosa*, n. sp., Manila; *id.* (5) p. 77.

Habropoma, redefined; FISCHER & CROSSE, p. 129.

Lagochilus mucronatus, n. sp., Bulacan, Philippines; MÖLLENDORFF, (5) p. 76. *L. tigrinulus*, n. sp., Siquijor, Philippines; *id.* (6) p. 142. *L. tenuipilis*, n. sp., Hoopé; GREDLER, (1) p. 364.

Leptopoma mekongiensis, n. sp., Cochin China; ROCHEBRUNE, (3) p. 63. *L. bodjoensis*, n. sp., Sumatra; SMITH, (5) p. 220, pl. ix, figs. 14 & 15. *L. cuticulare*, n. sp., Manila; MÖLLENDORFF, (5) p. 75. *L. roseum*, n. sp., Manila; *id.* (6) p. 142. *L. pumilum*, Mt. Arfak, p. 173, *L. apicale*, Sorong Isle and Ramoi, p. 175, *L. aurantiellum*, Kulo-Kadi and Tangion Bair, p. 177, *L. callichloros*, Ramoi, p. 178, *L. puniceum*, Jobi, p. 180, *L. nigritabrum*, Kapaor, p. 182, *L. gianelli*, Katau and banks of Fly River, p. 183; TAPPARONE-CANEFRI.

Licina ? rollei, n. sp., Haiti; MALTZAN, (1) p. 179.

Myxostoma delavayanum, n. sp., China; HEUDE, p. 243.

Neocyclotus, n. g., for American *Cyclophoridae*, with sharp peristome, and solid, calcareous, flattened polygyrate operculum, with central nucleus, pp. 150 & 160; anatomy, pp. 150-159, pls. xliii & xlvii; *N. translucidus* (Sowb.), p. 162, *N. dysoni* (Pfr.), p. 164, *N. berendti* (Pfr.), p. 167, *N. cooperi* (Tryon), p. 168; FISCHER & CROSSE.

Opisthoporus quadruai, n. sp., Philippines; HIDALGO, (1) p. 59, pl. v, fig. 6.

Pomatias euconus, n. sp., Tunis; ANCEY, (10) p. 215, fig. 2. *P. bolognianum*, n. sp., Olot; SALVAÑA, (2) p. 118.

Pupina porcellana, n. sp., Cochín China; ROCHEBRUNE, (3) p. 62.

Scabrina moellendorffi, n. sp., Hunan; GREGLER, (1) p. 362.

CYCLOSTOMATIDÆ.

Choanopoma kobelti, *C. bertini*, *C. strictocostatum*, n. spp., Haiti; MALTZAN, (1) pp. 180 & 181.

Chondropoma subreticulatum, n. sp., Haiti; *id. t. c.* p. 181.

Colobostylus, n. g., with the radula and shell of *Chondropoma*, &c., the operculum of *Cyclostoma*, characters of the animal generally those of *Cyclostomatidæ*, but with tentacles recalling those of the *Cyclophoridae*; for *Cyclostoma humphreyanus*, Pffr., and 24 other species from the Antilles; CROSSE & FISCHER.

Cyclostoma eustolum, n. sp., Madagascar; *iid.* (2).

TRUNCATELLIDÆ.

Truncatella fasciata, n. sp., Wokan, Aru; TAPPARONE-CANEFRI, p. 193.

HIPPONYCIDÆ.

Amalthea chamaiformis, n. sp., Cape Verd Is.; ROCHEBRUNE, (1) p. 29.

NATICIDÆ.

Natica fordiana, n. sp., Florida; SIMPSON (5).

ADEORBIIDÆ.

TRYON, (1) p. 13, here includes only *Adeorbis* and *Archytæa* (subg. *Pseudorbis*).

Adeorbis sequenzianus, n. n., = *A. depressus*, Seg. (*nec* A. Ad.); TRYON, (1) p. 84, pl. xxx, fig. 74.

SCUTIBRANCHIATA.

RHIPIDOGLOSSA.

HELICINIDÆ.

Helicina siquijorica, n. sp., Siquijor, Philippines; MÖLLENDORFF, (6) p. 142. *H. jobiensis*, Giobi, p. 189, *H. neglecta*, Ramoi, Mt. Arfak, and Giobi, p. 190; TAPPARONE-CANEFRI. *H. layardi*, n. sp., New Hebrides; HARTMAN, (3) p. 251, pl. xiii, fig. 6. *H. haitensis*, n. sp., Haiti; MALTZAN, (1) p. 182.

HYDROCENIDÆ.

Georissa rapstorffi, n. sp., S. Andaman Is.; GODWIN-AUSTEN, (2) p. 58.

Hydrocena bourguignati, *H. tanousi*, n. spp., Dalmatia ; LETOURNEUX.
H. bocourti, n. sp., Cochinchina ; ROCHEBRUNE, (3) p. 61.

NERITIDÆ.

TRYON, (1) pp. 1-11, here includes *Nerita* (several sectt., and subgg. *Lissochilus* and *Otostoma*), *Deshayesia*, *Neritina* (numerous sectt., subgg. *Clithon*, *Neripteron*, and *Dostia*), *Velates* (subg. *Tomostoma*), *Neritoma* (subgg. *Neridomus*, *Oncochilus*), *Dejanira*, *Navicella*, and *Pileolus* (subg. *Gargania*).

Nerita : monograph continued, no new species ; MARTENS (1).

Neritina funesta, n. sp., Secaer ; TAPPARONE-CANEVARI, p. 121 bis.

MACLURETIDÆ.

TRYON, (1) p. 11, hence includes (under name *Maclureida*) only the genus *Maclurea*.

NERITOPSIDÆ.

TRYON, (1) pp. 12 & 13, here includes *Neritopsis* and *Naticopsis* (subg. *Trachydromia*).

TURBINIDÆ.

PILSBRY (1) here includes :—

Subf. 1. *Phasianellina*, with *Phasianella* (subgg. *Phasianella*, *Tricolia*, *Chromotis*, *Orthomesus*), *Alcyna*.

Subf. 2. *Turbinina*, with *Turbo* (subgg. *Turbo*, *Callopoma*, *Ninella*, *Modelia*, *Ocana*, *Marmorostoma*, *Sarmaticus*, *Prisogaster*), *Astralium* (subgg. *Astralium*, *Lithopoma*, *Imperator*, *Guildfordia*, *Bolma*, *Cyclocantha*, *Uvanilla*, *Cookia*, *Pomaulax*, *Pachypoma*), *Leptothyra*.

Collonia, relations to *Leptothyra* discussed ; PILSBRY, (1) p. 246.
C. gestroi, n. sp., Assab ; CARAMAGNA, p. 132, pl. viii, fig. 10. This form referred to *Leptothyra* ; PILSBRY, (1) p. 262.

Leptothyra carpenteri, n. sp., California ; *id. t. c.* p. 247, pl. xxxix, figs. 26-29. *L. folini*, n. n., = *T. sanguineus*, Folin (*præocc.*), Mauritius ; *id. t. c.* p. 252, pl. lvii, fig. 58.

Orthomesus, n. subg. *Phasianella*, radula with central tooth absent or rudimentary ; for *P. variegata*, Lmk., &c. ; *id. t. c.* p. 179.

Phasianella deaniiana, n. sp., Corisco, W. Africa ; *id. t. c.* p. 169, pl. lxiv, figs. 40-43. *P. fordiana*, n. sp., Singapore ; *id. t. c.* p. 173, pl. xl, fig. 5. *P. peroni*, Australia, *P. marchei*, Philippines, n. spp. ; MABILLE, (1) p. 77.

Turbo subcastaneus, n. sp., hab. ? ; PILSBRY, (1) p. 204, pl. xlvi, figs. 10 & 11. *T. heterocheilus*, n. sp., hab. ? ; *id. t. c.* p. 209, pl. lxix, figs. 22 & 23.

TROCHIDÆ.

PILSBRY, (1) pp. 266-270, commences his monograph with Subf. 1. *Delphinulina*, including only *Delphinula* (subg. *Angarina*).

- Clanculus assabensis*, n. sp., Assab; CARAMAGNA, p. 131, pl. viii, fig. 8.
Euchelus delpretei, n. sp., Assab; *id. t. c.* p. 131, pl. viii, fig. 9.
Gibbula doriae, p. 127, pl. viii, fig. 3, *G. pantanellii*, p. 128, pl. viii, fig. 4,
G. tapparoni, p. 129, pl. viii, fig. 5, *G. isselii*, p. 129, pl. viii, fig. 6, *G. de gregorii*, p. 130, pl. viii, fig. 7, n. spp., Assab; *id. t. c.*
Gibbulastra, n. g.?, for *Trochus divaricata*, L.; MONTEROSATO, p. 177.
Minolia caifassii, n. sp., Assab; *id. t. c.* p. 126, pl. viii, fig. 1.
Trochus (Gibbula?) ponsonbyi, n. sp., Port Elizabeth; SOWERBY, (1) p. 209, pl. xi, fig. 5.
T. (Ziziphinus) exquisitus, n. sp., hab. ?; *id. t. c.* p. 210, pl. xi, figs. 6 & 7.

LIOTIDÆ.

- TRYON, (1) p. 17, here includes *Liotia* (subgg. *Liotina*, *Scavola* ?), *Craspedostoma*, and *Crossostoma* ?.

CYCLOSTREMATIDÆ.

- TRYON, (1) pp. 14-16, here includes *Cyclostrema* (several sect., subgg. *Tharsis* and *Ganesa*), *Vitrinella*, *Teinostoma* (subgg. *Pseudoretella*, *Diacopsis*, *Leucorhynchia*, *Microtheca*?, *Morchia*?, *Cirsonella*?, *Haplocochlias*?, *Cynisca*?).

Cyclostrema archeri, n. sp., Singapore; TRYON, (1) p. 89, pl. xxxiii, figs. 84 & 85. *C. verrilli*, n. n., = *C. cingulatum*, VII. (præocc.); *C. dunkeri*, n. n., = *C. cingulata*, Dkr. (præocc.); *id. t. c.* pp. 90 & 91. *C. watsoni*, n. n., = *C. sulcata*, Wats. (nec A. Ad.); *id. t. c.* p. 94.

C. (Daronia) subexcavata, n. n., = *C. excavata*, Wats. (nec Carp.); *id. t. c.* p. 99.

O. (Tubiola) proxima, n. n., = *C. affinis*, VII. (nec Jeffr.); *id. t. c.* p. 98.

Vitrinella meneghinii, n. sp., Assab; CARAMAGNA, p. 127, pl. viii, fig. 2.

HALIOTIDÆ.

- Haliotis jousseaumi*, n. sp., hab. ?; MABILLE, (1) p. 81.

DOCOGLOSSA.

ACMÆIDÆ.

- Scutellina fischeri*, n. sp., Cape Verd Is.; ROCHEBRUNE, (1) p. 29.

PATELLIDÆ.

- Patella taslei*, Britain and France, p. 78, *P. ordinaria*, Canaries, *P. gouldoti*, Tangier, p. 79, *P. teneriffæ*, Teneriffe and Madeira, *P. servaini*, N. France, p. 80, n. spp.; MABILLE (1). *P. rangiana*, n. sp., Cape Verd Is.; ROCHEBRUNE, (1) p. 29.

Patellastra, n. g.?, for *Patella lusitanica*, Gm.; MONTEROSATO, p. 165.

COCHLOSyrINGIA, n. subord.

For *Entocolax*, n. g., for *E. ludwigii*, n. sp., endo-parasitic on *Myriotrochus rinkii*, from Bering's Sea. It is an acephalous tube, whose knob-like anterior end penetrates the body-wall of the host; jaws, radula, circulatory, and respiratory organs are absent; there is a rudimentary efferent duct, and the ova are liberated by tearing the wall of the ovary; VOIGT.

POLYPLACOPHORA.

CHITONIDÆ.

Acanthochites hamatus, p. 191, Algeria, *A. tristis*, *A. turgidus*, *A. jucundus*, p. 194, Australia, n. spp.; ROCHBRUNE (4).

Acanthopleura vaillanti, Suez Canal, *A. afra*, Cape of Good Hope, p. 192, *A. rawakiana*, p. 195, New Guinea, *A. balansæ*, p. 197, Australia and New Caledonia, n. spp.; *id. t. c.*

Chetopleura thooarsiana, p. 191, Kamtskatka, *C. dacrydigera*, p. 193, Central America, *C. biarmata*, p. 195, "Port du roi George," n. spp.; *id. t. c.*

Cryptoconchus stewartianus, n. sp., New Zealand; *id. t. c.* p. 194.

Cryptoplax montanoi, p. 190, Borneo, *C. peroni*, p. 193, Australia, *C. caledonicus*, *C. hensteli*, p. 196, *C. unciferus*, p. 197, New Caledonia, n. spp.; *id. t. c.*

Gymnoplax hamyi, *G. insularis*, Cape Verd Is., n. spp.; *id.* (1) pp. 26 & 27.

Lepidopleurus bottæ, n. sp., Red Sea; *id.* (4) p. 192.

Ornithochiton decipiens, n. sp., Cook's Straits; *id. t. c.* p. 196.

Schizochiton polyophthalmus [*sic*], n. sp., Philippines; *id. t. c.* p. 191.

Tomicia fontainei, n. sp., Chili; *id. t. c.* p. 193.

APLACOPHORA.

NEOMENIIDÆ.

Dondersia, n. g., violet in colour, with two kinds of spicules, blunt needle-shaped and scoop-shaped, the latter with the broad end directed outwards; few layers of spicules in the thickness of the skin; pedal fold triangular in section; no dorso-terminal sensory papilla; radula small and clearly defined, freely projecting into the lumen of the œsophagus; two short laterally-placed salivary glands; several buccal glands around the œsophagus; a strong commissure between the lateral and pedal nerve-cords; sublingual commissure not distinctly demonstrated; byssus-gland consisting of three contiguous lobes with free thick threads, for *D. festiva*, n. sp.; Naples: HUBRECHT.

Proneomenia vagans and *P. desiderata* on rhizome of *Posidonia*, and *P. aglaophenia* on *Aglaophenia myriophyllum*, n. spp., shores of Provence; MARION & KOWALEWSKY.

SCAPHOPODA.

DENTALIIDÆ.

Anatomy and relations; PLATE.

PELECYPODA.

Phylogeny; PELSENEER (3); SHARP, see p. 41, *antea*.

TETRABRANCHIA.

OSTREACEA.

ANOMIIDÆ.

Anomia: monograph of French forms; BUCQUOY, DAUTZENBERG, & DOLLFUS.

PECTINACEA.

SPONDYLIDÆ.

Spondylus fauroti, n. sp., Red Sea; JOUSSEAUME, p. 221.

LIMIDÆ.

Lima smithi, Japan, *L. concentrica*, Hong Kong, n. spp.; SOWERBY, (1) p. 207, pl. xi, figs. 12 & 20.

Radula preferred to *Lima* as generic name, and family name altered to correspond; BUCQUOY, DAUTZENBERG, & DOLLFUS, p. 50.

PECTINIDÆ.

Pecten. The Martini-Chemnitz Monograph is completed, 257 species being recognized; the following are described for the first time—*P. schmeltzii*, Dkr., Fiji, p. 272, pl. lxxi, figs. 5 & 6, *P. nigromaculatus*, Dkr., Fiji, p. 273, pl. lxxi, figs. 7 & 8, *P. sulphureus*, Dkr., Fiji, p. 276, pl. lxxii, figs. 5 & 6; KOBELT (5). 35 French species enumerated, with full descriptions and notes; the following regarded as new—*P. anisopleurus* = *P. glaber*, Reeve (*nec* Linn.), p. 214, *P. amphicyrtus* = *P. polymorphus*, Cailliaud (*nec* Brown), p. 224; LOCARD (2). *P. gladyrie*, *P. hyssiginodes*, hab.?, *P. guendolene*, Mauritius, *P. hastingii*, *P. psarus*, Japan, *P. valdecostatus*, Hong Kong, n. spp.: MELVILL (1).

MYTILACEA.

MYTILIDÆ.

Dactylus fauroti, *D. erythraensis*, n. spp., Red Sea; JOUSSEAUME, pp. 217 & 218.

Limnoperna, n. g., for *Modiola siamiensis*, Morelet, and *L. lemeslei*, n. sp., Cochin China; ROCHEBRUNE, (3) pp. 102 & 104.

Modiola: French forms of the genus revised, 11 species being admitted and the following described as new—*M. mytiloides*, p. 92, pl. i, fig. 2, *M. pterota*, p. 95, fig. 3, *M. brachytera*, p. 116, fig. 9; LOCARD (4). *M. ovalis*, n. sp., Chili; CLESSIN, (4) p. 128, pl. xxxiii, figs. 4 & 5.

Mytilus irisans, n. sp., Red Sea; JOUSSEAUME, p. 215.

ARCACEA.

ARCIDÆ.

Arca amaliae, n. sp., hab. ?; KOBELT (7), and (3) p. 26, pl. viii, figs. 1 & 2.

A. (Anomalocardia) spherica, n. sp., hab. ?; *id. t. c.* p. 53, pl. xv, figs. 3 & 4. *A. (A.) d'Orbigny*, n. sp., W. Indies; *id.* (13).

Cucullæ: 2 species recognized; *id.* (3).

Parallepipedium fauroti, n. sp., Aden; JOUSSEAUME, p. 214.

NUCULIDÆ.

Malletia angulata, n. sp., Bay of Bengal, 200 fath.; SOWERBY, (1) p. 208, pl. xi, fig. 15.

SUBMYTILACEA.

UNIONIDÆ.

Notes on British forms; ROBERTS (4).

Anodonta nefaria, *A. nocturna*, *A. quadrangulata*, pl. ix, fig. 1, *A. germanica*, *A. visurgisina*, pl. viii, fig. 3, *A. moctera*, pl. ix, fig. 4, *A. eusomata*, *A. alsterica*, n. spp., Hamburg; SERVAIN, (2) pp. 325–337. *A. baetica*, n. sp., Seville; KOBELT, (1) p. 57, pl. xc, fig. 498; also *id.* (8) p. 28. *A. calderoni*, n. sp., Andalusia; *id. t. c.* p. 26. *A. ambrosiana*, p. 250, fig. 30, *A. cobelli*, p. 252, fig. 31, *A. strobili*, p. 255, *A. zenii*, p. 258, fig. 28, n. spp., N. Italy; ADAMI. *A. brandii*, Armenia, p. 108, *A. formosus*, *A. tremula*, France, p. 109, *A. conveza*, *A. amica*, France, p. 110, n. spp.; DROUET. *A. laminata*, n. sp., Cochin China; ROCHEBRUNE, (3) p. 40. *A. legumen*, n. sp., Rio Grande; MARTENS, (5) p. 65. *A. cygnea* and *A. anatina*, merely varieties; WEBB: distinct species; ROBERTS (5).

Measurements of various species by Bourguignat criticized; SCHRÖDER (2).

Chelidonopsis, n. n. for *Chelidonura*, Rochebrune (*nec* Adams); ANCEY (6).

Diplodon ludovicianum, n. sp., Cochin China; ROCHEBRUNE, (3) p. 43.

Dysnomia pavonina, n. sp., Cochin China; *id. ibid.*

Harmandia, n. g., for *H. somboriensis*, n. sp., Cochin China; *id. t. c.* pp. 45 & 46, pl. i.

Pseudodon anodontinum, *P. pierre*, *P. mabilli*, *P. sulcatum*, n. spp., Cochin China; *id. t. c.* p. 41.

Spatha pangallensis, n. sp., Senegal; *id. t. c.* p. 33.

Unio baudoni, n. sp., France; FOLIN (5). *U. hamburgiensis*, *U. visurgisinus*, *U. peraculus*, pl. viii, fig. 1, *U. hammoniensis*, *U. mulierum*, pl. viii, fig. 2, *U. anabanus*, pl. ix, figs. 2 & 3, n. spp., Hamburg; SERVAIN, (2) pp. 315-324. *U. hispalensis*, n. sp., Seville; KOBELT, (1) p. 53, pl. lxxxviii, fig. 492. *U. baeticus*, Seville; *id. t. c.* p. 55, pl. lxxxix, fig. 495. *U. (hispanus var.) sevellensis*, n. sp., Seville; *id. t. c.* p. 56, pl. lxxxix, fig. 496. *U. calderoni*, n. sp., Seville; *id. t. c.* p. 57, pl. lxxxix, fig. 497: see also for descriptions without figs., *id.* (8). *U. gaudiensis*, Spain, p. 103, *U. occidaneus*, France, p. 104, *U. plebeius*, France, *U. charpyi*, Savoy, p. 105, *U. crassulus*, France, *U. lacustris*, Bourget, p. 106, *U. suborbicularis*, France, *U. badiellus*, Savoy, p. 107, n. spp.; DROUET. *U. bourguignatianus*, p. 234, figs. 13 & 14, *U. athesinus*, p. 236, figs. 16 & 17, *U. piccinellii*, p. 239, figs. 18 & 19, *U. tommasii*, p. 241, figs. 20 & 21, *U. cristophori*, p. 242, figs. 24 & 25, *U. gredleri*, p. 245, fig. 22, *U. ruffonii*, p. 248, figs. 26 & 27, n. spp., N. Italy; ADAMI. *U. traversii*, n. sp., Shoa; POLLONERA, (5) p. 85, pl. iii, figs. 14 & 15. *U. bakoyi*, *U. duponti*, *U. mandingorum*, n. spp., Senegal; ROCHEBRUNE, (2) pp. 33 & 34. *U. inaequalis*, *U. jaculus*, n. spp., Cochinchina; *id.* (3) p. 44. *U. legrandi*, n. sp., Tasmania; PETTERD, (1) p. 22. *U. koseritzii*, n. sp., R. Guahyba, Brazil; CLESSIN, (6) p. 172. *U. fryanus*, p. 113, pl. ii, fig. 1, *U. websterii*, p. 113, pl. ii, fig. 2, *U. waltoni*, p. 114, pl. ii, fig. 3, *U. dorei*, p. 115, pl. iii, fig. 1, *U. averellii*, p. 115, pl. iii, fig. 3, *U. nolani*, p. 116, pl. iv, fig. 1, *U. hinkleyi*, p. 117, pl. iv, fig. 2, *U. simpsoni*, p. 117, pl. v, fig. 1, *U. marshii*, p. 118, pl. v, fig. 2, *U. dallii*, p. 119, pl. vi, fig. 1, *U. tryoni*, p. 120, pl. vi, fig. 2, n. spp., Florida; WRIGHT, B. H. (2). *U. orcuttii*, Manatee River, W. coast of Florida, and Lake Miakka; WRIGHT, S. H., p. 60. *U. ozarkensis*, Call, *U. breviculus*, Call, Ozark region, Missouri; CALL (1).

CARDITIDÆ.

Cardita. 102 species are recognized in the Martini & Chemnitz Monograph; the following are described as new: *C. paeteliana*, Iquiqui, p. 20, pl. vi, figs. 7 & 8, *C. lamarckiana*, hab.?, p. 20, pl. vi, figs. 1 & 2, *C. reeveana* (= *C. sulcata*, Reeve, *partim*), hab.?, p. 37, pl. v, figs. 6 & 7, *C. picta* (= *C. radiata*, Reeve, *partim*) hab.?, p. 40, pl. xiii, fig. 8, *C. oblonga*, Zanzibar, p. 43, pl. viii, figs. 1 & 2, *C. irregularis*, Ticao, p. 46, pl. x, figs. 1-3, *C. philippinarum*, Philippines, p. 46, pl. x, figs. 10 & 11, *C. inflata*, hab.?, p. 47, pls. vii, figs. 6 & 7, & x, figs. 8 & 9, *C. rubida*, Australia, p. 47, pl. xi, figs. 9 & 10, *C. pallida*, Zanzibar, p. 48, pl. ix, figs. 1 & 2, *C. incerta*, hab.?, p. 48, pl. vii, figs. 4 & 5, *C. albida*, Malacca, p. 49, pl. vii, fig. 14, *C. broderipi*, Puerto-Caballo, p. 50, pl. xi, figs. 7 & 8, *C. ovata*, hab.?, p. 52, pl. vi, figs. 12 & 13, *C. subquadrata*, hab.?, p. 53, pl. xi, figs. 3 & 4, *C. bruguieriana*, hab.?, p. 54, pl. vi, figs. 5 & 6; CLESSIN (2).

Prasina borbonica, Desh., described, figured, and referred to this family; *id. t. c.* p. 55, pl. xiii, figs. 6 & 7.

ERYCINACEA.

GALEOMMIDÆ.

Lionelita, n. g.: with regular shell, varnish-like epidermis, margins inclined rapidly towards each other and denticulate within; for *L. lionelita*, n. sp., and *Scintilla cumingii*, Desh., Red Sea; JOUSSEAUME, p. 204.

Scintilla obockensis, n. sp., Red Sea; *id. t. c.* p. 202.

Scintillula, n. g.: oval and almost spherical, not gaping, with smooth margin and flattened apex; for *S. scintillula*, n. sp., Red Sea; *id. t. c.* p. 203.

CARDIACEA.

CARDIIDÆ.

Trachycardium peregrinum, n. sp., Red Sea; JOUSSEAUME, p. 212.

CHAMACEA.

CHAMIDÆ.

Chama. 18 species described and figured, none new; CLESSIN (3).

CONCHACEA.

VENERIDÆ.

Cytherea isselina, n. sp., Red Sea; JOUSSEAUME, p. 206.

C. (Caryatis) hungerfordi, n. sp., Hong Kong; SOWERBY, (1) p. 212, pl. xi, fig. 4.

CYRENIDÆ.

Pisidium piattii, n. sp., N. Italy; ADAMI, p. 231. *P. globulus*, n. sp., Taguara, Brazil; CLESSIN, (6) p. 173. *P. dabneyi*, redescribed; GUERNE, (1) p. 41.

Sphærium briandianum, n. sp., Hamburg; SERVAIN, (2) p. 310.

UNGULINIDÆ.

Choristodon serricula, n. sp., Cochin China; ROCHEBRUNE, (3) p. 48.

SOLENIIDÆ.

The Martini-Chemnitz monograph is completed, the following genera being included :—

Cultellus, 20 species recognized; CLESSIN (5).

Pharella, 7 species recognized; *id. t. c.*

Machæra, 18 species recognized; *id. t. c.*

Solen. 50 species are recognized, and the following forms regarded as new: *S. incertus*, Japan, p. 31, pl. xii, fig. 8, *S. nitidus*, Mexico, p. 34,

1888. [VOL. XXV.]

D 10

pl. xiii, fig. 2, *S. goreensis*, W. Africa, p. 34, pl. xiii, fig. 4, *S. pictus*, Australia (= *S. philippianus*, Reeve, *partim*), p. 35, pl. xii, fig. 5, *S. dunkerianus*, South Sea?, p. 35, pl. viii, fig. 5; *id. t. c.*

Tagelus, 21 species described and figured, with 2 new species, *T. dunkerianus*, hab.?, p. 82, pl. xxv, fig. 5, *T. obtusatus*, Malacca, p. 83, pl. xxv, fig. 6; *id. t. c.*

MYACEA.

MESODESMATIDÆ.

Mesodesma savignyi, n. sp. (Descr. Egypte, pl. viii, fig. 5); JOUSSEAUME, p. 206.

MACTRIDÆ.

Mactra isthmia, *M. fauroti*, n. spp., Red Sea; JOUSSEAUME, pp. 199 & 200.

ADESMACEA.

PHOLADIDÆ.

Pholadidea fauroti, n. sp., Red Sea; JOUSSEAUME, p. 196.

SEPTIBRANCHIA.

Pelecypoda, with modified gills (*cf.* p. 36 *antea*), for the families *Poromyida* (*Poromya*, *Silenia*, Smith) and *Cuspidariidæ*; PELSENEER (3).

DIBRANCHIA.

ANATINACEA.

CLAVAGELLIDÆ.

Aspergillum giganteum, n. sp., Japan; SOWERBY (2).

Clavagelia adenensis, n. sp., Aden; JOUSSEAUME, p. 197.

BRACHIOPODA.

BY

WILLIAM E. HOYLE, M.A., F.R.S.E.

- AGASSIZ, A. Three Cruises of the Blake. Bull. Mus. C. Z. xiv, xv, pp. xxii, 314, & 220, 545, figs. & maps; also separately, with title—A Contribution to American Thalassography. Three Cruises of the United States Coast and Geodetic Survey Steamer "Blake," in the Gulf of Mexico, in the Caribbean Sea, and along the Atlantic Coast of the United States, from 1877 to 1880. Boston, New York, and London: 1888, 8vo.
- BITTNER, A. (1) Ueber das Auftreten von Terebrateln aus der Subfamilie der Centronellinen in der alpinen Trias. Verh. geol. Reichsanst. 1888, pp. 125-127.
- . (2) Ueber das Auftreten von Arten der Gattung *Thecospira* Zugmayer in der alpinen Trias. T. c. pp. 127 & 128.
- . (3) Ueber ein Vorkommen von Brachiopoden des salzburgischen Hochgebirgs-Korallenkalkes an der Tonionalpe, südöstlich von Gusswerk-Mariazell, und über einen Fundort von Hallstätter Petrefacten an den Neun Kögerln gegenüber der Tonion. T. c. pp. 174-176.
- COOPER, W. F. Tabulated List of Fossils known to occur in the Waverly of Ohio. Bull. Denison Univ. iv, pp. 123-129. [*Brachiopoda*, pp. 127 & 128.]
- DAVIDSON, T. A Monograph of Recent *Brachiopoda*. Part III. Tr. L. S. (2) iv, pp. 183-248, pls. xxvi-xxx.
- DOLLFUS, G., & DAUTZENBERG, P. Descriptions de Coquilles nouvelles des Faluns de la Touraine. J. de Conch. xxviii, pp. 243-269, pls. xi & xii. [*Brachiopoda*, pp. 243-247.]
- DREGER, J. Die tertiären Brachiopoden des Wiener Beckens. Beitr. Pal. Oesterr.-Ung. vii, pp. 179-192, pls. v-vii; abstr., Verh. geol. Reichsanst. 1888, pp. 301 & 302.
- ETHERIDGE, R. Fossils of the British Islands, stratigraphically and zoologically arranged. Vol. i. Palæozoic. Oxford: 1888, 4to, viii & 468 pp. [*Brachiopoda*, pp. 74-94, 148-158, 250-269, 360-363, 412-416, 431-433, & 460.]

FINKELSTEIN, H. Der Laubenstein bei Hohen-Aschau ; ein Beitrag zur Kenntniss der Brachiopodenfacies des unteren Alpinen Doggers. N. Jahrb. f. Min. Beilage Band, vi, pp. 36-104, 3 pls., map.

*FRAIPONT, J. (1) Une nouvelle Discine du Calcaire carbonifère inférieur, *Discina (Orbiculoïdea) multistriata*, n. sp. Ann. Soc. géol. Liège, 3 pp., cut.

° —. (2) Une Lingule nouvelle du Calcaire carbonifère de Visé, *Lingula koninckii*. T. c. 4 pp., cut.

FRIEN, A. Mélanges paléontologiques. II. i. Faune fossile de Bévire (Lias moyen); ii. Observations sur quelques brachiopodes très rares; iii. Histoire de deux fossiles du lias moyen. . . . Bull. Soc. Metz (2) xvii, 1887, pp. 49-83. [*Brachiopoda*, pp. 49-76.]

GAUTIER, —, & LAMBERT, —. Notes pour servir à l'histoire du terrain de craie dans le sud-est du bassin anglo-parisien. Par M. A. Peron. Avec notes et descriptions d'Echinides nouveaux ou peu connus. Bull. Soc. Yonne, xli, pp. 145-366.

GLASS, N. On the Principal Modifications of the Spirals in the Fossil *Brachiopoda*. Geol. Mag. (3) v, pp. 77-80.

°GOSSELET, J. Note sur quelques Rhynchonelles du terrain dévonique supérieur. Ann. Soc. géol. Nord, 1887, 34 pp., 3 pls.

GRIEG, J. A. Undersøgelser over dyrelivet i de vestlandske fjorde. I. Møster. Bergens Mus. Aarsber. 1887, 13 pp. [*Brachiopoda*, p. 5.]

HAAS, H. Étude monographique et critique des Brachiopodes Rhétiens et Jurassiques des Alpes Vaudoises et des contrées environnantes. Brachiopodes liasiques et toarciens, Brachiopodes du Dogger et du Malm. Mém. Soc. Pal. Suisse, xiv, pp. 67-126, pls. v-x.

HAPE, W. Preliminary Report upon the Fauna and Flora of Plymouth Sound. J. Mar. Biol. Ass. ii, pp. 153-193. [*Brachiopoda*, p. 185.]

HEATH [Miss] A. Notes on a Tract of Modified Ectoderm in *Crania anomala* and *Lingula anatina*. P. Biol. Soc. Liverpool, ii, pp. 95-104, pls. iii-v; abstr., J. R. Micr. Soc. 1889, pp. 48 & 49.

HERRICK, C. L. Geology of Licking County. Part iv. Bull. Denison Univ. iii, pp. 13-110, pls. i-xii; iv, pp. 11-60, 97-123, pls. i-xi. [*Brachiopoda*, iii, pp. 31-50; iv, pp. 11-28.]

†HOLM, T. Beretning om de paa Fyllas Togt i 1884 foretagne zoologiske Undersøgelser i Groenland. 8vo, 19 pp.

[JACKSON, W. H. See ROLLESTON.]

KEEP, J. West Coast Shells. A Familiar Description of the Marine, Fresh-Water, and Land Mollusks of the United States, found west of the Rocky Mountains. San Francisco: 1888, 8vo, 230 pp., 1 pl., 181 cuts. [*Brachiopoda*, pp. 214 & 215.]

KEYES, C. B. On the Fauna of the Lower Coal Measures of Central Iowa. P. Ac. Philad. 1888, pp. 222-246, pl. xii. [*Brachiopoda*, pp. 226-232.]

- KILIAN, W. Description géologique de la montagne de Lure. Ann. Sci. Géol. xx, 1888, pp. 1-215, pls. i-iv.
- KONINCK, L. G. DE. Faune du Calcaire Carbonifère de la Belgique. vi. Brachiopodes. Brussels: 1887, 4to, 10 & 154 pp., 37 pls., portrait.
- LO BIANCO, S. Notizie biologiche riguardanti specialmente il periodo di maturità sessuale degli animali del golfo di Napoli. MT. z. stat. Neap. viii, pp. 385-440. [*Brachiopoda*, pp. 405 & 406.]
- MARR, J. E., & NICHOLSON, H. A. The Stockdale Shale. Q. J. Geol. Soc. xlv, pp. 654-730, pl. xvi.
- MARSHALL, J. T. (1) On *Terebratula papillosa*, Marshall. J. of Conch. v, p. 278.
- . (2) *Argiope decollata* at Scilly. T. c. pp. 361 & 362.
- NORMAN, A. M. Museum Normanianum, or A Catalogue of the *Invertebrata* of Europe, and the Arctic and North Atlantic Oceans, which are contained in the collection of the Rev. Canon A. M. Norman, M.A., D.C.L., F.L.S. iv. *Mollusca marina*. v. *Brachiopoda*. Printed for private distribution. Durham: 1888, 8vo, 30 pp.
- OEHLERT, D. P. (1) Brachiopodes du Dévonien de l'ouest de la France. Bull. Soc. Angers, xvii, pp. 57-64, pl. v.
- . (2) Descriptions de quelques espèces dévoniennes du département de la Mayenne. T. c. pp. 65-120, pls. vi-x. [*Brachiopoda*, pp. 99-103.]
- RINGUEBERG, E. N. S. Some new species of fossils from the Niagara Shales of Western New York. P. Ac. Philad. 1888, pp. 131-137, pl. vii.
- ROLLESTON, G. Forms of Animal Life. A Manual of Comparative Anatomy, with Descriptions of Selected Types. Second Edition, revised and enlarged by W. HATCHETT JACKSON. Oxford: 1888, 8vo, xxxii, & 937 pp., 14 pls., cuts. [*Brachiopoda*, pp. 692-703.]
- SERVAIN, G. Catalogue des coquilles marines recueillies à Concarneau et dans la Baie de la Forest (Finistère). Lyon: 1888, 8vo, 129 pp. [*Brachiopoda*, pp. 128 & 129.]
- *TOMMASO, A. Alcuni Brachiopodi della zona Raibelliana di Dogna nel canal del Terro. Nota paleontologica. Ann. Istit. tecnico di Undine (2) 1887, 12 pp.; also separately, Undine: 1887, 8vo.
- TUTE, J. S. Note on the occurrence of *Lingula* in the Millstone Grist Series, West of Ripon. P. Yorks. Geol. Polytech. Soc. ix, p. 425.
- VINE, G. R. Notes on the Palæontology of the Wenlock Shales of Shropshire. P. Yorks. Geol. Polytech. Soc. ix, pp. 224-248.
- WALCOTT, C. D. A fossil *Lingula* preserving the Cast of the Peduncle. P. U. S. Nat. Mus. 1888, p. 480.
- WALKER, J. F. On the Occurrence of *Terebratula gesneri* in Yorkshire. P. Yorks. Phil. Soc. 1887, pp. 33 & 34.

WEBSTER, C. L. Description of New and Imperfectly Known Species of *Brachiopoda* from the Devonian Rocks of Iowa. *Am. Nat.* xxii, pp. 1100-1104.

TEXT-BOOKS, ANATOMY, &c.

The publication of the Monograph of Recent *Brachiopoda* is completed, the number of species being brought up to 99 certain, 29 uncertain; DAVIDSON.

Tract of modified ectoderm, presumably sensory, described; HEATH.

Spirals of several fossil forms described; GLASS.

Times of sexual maturity; LO BIANCO.

Morphology in general; ROLLESTON.

GEOGRAPHICAL DISTRIBUTION.

Norway. GRIEG.

British Isles. Catalogue of Palæozoic species; ETHERIDGE.

Yorkshire. *Terebratula gesneri*, coral rag; WALKER. *Lingula credneri*, Millstone Grit; TUTE.

Shropshire. VINE.

Cornwall. *Argiope decollata* and *A. cistellula*; MARSHALL (2).

Plymouth. HEAPE.

Belgium. Many new species from the Carboniferous Limestone; KONINCK.

Touraine. 2 new Brachiopods; DOLLFUS & DAUTZENBERG.

France. Species from the crag of the Anglo-Parisian Basin; GAUTIER & LAMBERT. Several Devonian species figured; EHLERT.

Concarneau. 2 recent Brachiopods; SERVAIN.

Lothringen. Few Liassic forms; 1 new species; FRIESEN.

Switzerland. Monograph of Brachiopods, with 5 new species; HAAS.

Alps. *Thecospira* from Trias; BITTNER (2). *Terebratula praepunctata*, n. sp.; *id.* (3).

American Coast. Deep-water forms discussed, with 10 figs.; AGASSIZ, pp. 75-77.

Ohio. List with 16 new species from Waverly formation; HERRICK. Tabulated list; COOPER.

Iowa. Several species from Coal Measures; 1 new species; KEYES. Devonian forms; WEBSTER.

Western States. KEEP.

INARTICULATA.

LINGULIDÆ.

Lingula æqualis, cast showing peduncle; WALCOTT. *L. atra*, pl. x, fig. 30, *L. gannensis*, pl. iii, figs. 2 & 3, *L. meeki*, pl. iii, fig. 4, *L. waverlyensis*, pl. iii, fig. 1, n. spp., Ohio; HERRICK, pp. 12-18. *L. suessi*, n. sp., Leithakalk, Vienna Basin; DREGER, p. 182.

DISCINIDÆ.

Discina scutellum, n. sp., Tertiary, Immendorf ; DREGER, p. 182.

CRANIIDÆ.

Craniella, n. g.: with ventral valve completely fixed, no limbus properly so called, and subcentral adductors approximated to the dorsal valve ; for *C. meduunensis*, n. sp., France, Devonian ; CEHLERT, (2) p. 101, pl. x, fig. 1.

ARTICULATA.

PRODUCTIDÆ.

Chonetes tumidus, n. sp., fossil, Ohio ; HERRICK, iii, p. 36, pl. ii, fig. 21.

C. lævis, n. sp., Iowa ; KEYES, p. 229, pl. xii, fig. 3.

Productus varicosatus, pl. iii, fig. 19, (?) vol. iii, pl. iii, fig. 28, *P. newberryi*, pl. x, figs. 24 & 35, *P. rushvillensis*, pl. iii, fig. 15, *P. nodocostatus*, n. sp., Ohio ; HERRICK, pp. 19-23.

STROPHOMENIDÆ.

Orthis acutiloba, n. sp., Niagara Shales ; RINGUEBERG, p. 134, pl. vii, fig. 5.

SPIRIFERIDÆ.

Athyris ashlandensis, n. sp., Ohio ; HERRICK, p. 24, pl. iii, fig. 6. *A. lereillei*, p. 77, *A. rotundata*, p. 78, *A. globulina*, p. 78, *A. vittata*, p. 81, *A. ingens*, p. 83, *A. ornata*, p. 84, *A. membranacea*, p. 89, *A. waageni*, p. 90, Carboniferous of Belgium ; KONINCK.

Retzia intermedia, p. 93, *R. multiplicata*, p. 95, Carboniferous of Belgium ; *id.*

Rhynchospira (?) *ashlandensis*, n. sp., Ohio ; HERRICK, p. 25, pl. iii, fig. 16.

Spirifer ventricosus, p. 116, *S. pentagonus*, p. 117, *S. acutus*, p. 117, *S. suavis*, pp. 118 & 131, *S. spissus*, p. 118, *S. subconvolutus*, p. 128, *S. capillaris*, p. 130, *S. plicatilis*, p. 131, *S. papilionaceus*, p. 132, *S. eximius*, p. 136, Carboniferous of Belgium ; KONINCK. *S. tenuispinatus*, pl. ii, fig. 4, *S. deltoideus*, pl. ii, fig. 7 ; HERRICK, p. 27. *S. winchelli*, n. sp., fossil, Ohio ; *id.* iii, p. 46, pls. ii, fig. 16, & v, figs. 2-5. *S. substrigosa*, n. sp., Devonian, Iowa ; WEBSTER, p. 1101.

Spiriferina peracuta, p. 101, *S. mülleri*, p. 103, *S. laminosa*, p. 103, Carboniferous of Belgium ; KONINCK. *S. gillieron*, n. sp., M. Lias, Switzerland ; HAAS, p. 72. *S. depressa*, n. sp., fossil, Ohio ; HERRICK, iii, p. 47, pl. x, fig. 3.

ATREPIDÆ.

Atrypa flexuosa, n. sp., fossil, Cumberland ; MARR & NICHOLSON, p. 725, pl. xvi, fig. 20.

RHYNCHONELLIDÆ.

Camarophoria indentata, p. 68, *C. ? dubia*, p. 68, Carboniferous of Belgium; KONINCK.

Rhynchonella mecoyi, p. 43, *R. pulchella*, p. 45, *R. sublævis*, p. 45, *R. obscura*, p. 46, *R. abnormis*, p. 47, *R. præcox*, p. 47, *R. canaliculata*, p. 47, *R. solitaria*, p. 48, *R. trisulcosa*, p. 48, *R. lœta*, p. 54, *R. multirugata*, p. 54, *R. moresnetensis*, p. 58, Carboniferous of Belgium; *id.* *R. undaelimbata*, p. 96, *R. cymboïdes*, p. 97, *R. depressicosta*, p. 99, *R. vilsensis*, p. 99, *R. chiemiensis*, p. 100, *R. aschaviensis*, p. 102, Dogger of Hohen-Aschau; FINKELSTEIN. *R. uhi* [misprinted *R. de stefanoi*, on pl.], *R. lorioli*, *R. paronai*, *R. n. sp. (?)*, *R. jaccardi*, n. spp., Oolite, Switzerland; HAAS, pp. 82, *et seqq.* *R. discites*, n. sp., Tertiary, Vienna Basin; DREGER, p. 183. *R. dollfusi*, n. sp., barremien inf., Combe-Petite; KILIAN, p. 201.

TEREBRATULIDÆ.

Dielasma antiquum, p. 11, *D. tumidum*, p. 12, *D. griffithi*, p. 12, *D. kingi*, p. 13, *D. intermedium*, p. 14, *D. hordeaceum*, p. 14, *D. latifrons*, p. 15, *D. securiforme*, p. 15, *D. perovale*, p. 16, *D. insigne*, p. 16, *D. tenerum*, p. 17, *D. lenticulare*, p. 17, *D. anaenum*, p. 18, *D. virginalæ*, p. 20, *D. canaliferum*, p. 21, *D. normale*, p. 21, *D. avellana*, p. 22, *D. subfusiforme*, p. 23, *D. amygdaloides*, p. 23, *D. finale*, p. 24, *D. radiatum*, p. 25, *D. abbreviatum*, p. 25, *D. pilula*, p. 26, *D. gemmula*, p. 29, *D. corrugatum*, p. 29, *D. vesiculare*, p. 30, Carboniferous of Belgium; KONINCK.

Jucavella, n. g., for *J. suessi*, n. sp., Alpine Trias; BITTNER, (1) p. 127.

Nucleatula, n. g., for *Rhynchonella retrocita*, Suess; *id. t. c.* p. 126.

Orthoidea liasina defended; FRIEN, pp. 73-76.

Terebratula papillosa, Marshall [cf. Zool. Rec. xxiv, *Brach.* p. 5], = *Terebratulina striata*, d'Orb.; MARSHALL (1). *T. præpunctata*, n. sp., Tonionalp; BITTNER, (3) p. 175. *T. pantrioptycha*, p. 78, *T. aschaviensis*, p. 81, *T. rothplatzii*, p. 84, *T. fylgiaformis*, p. 85, *T. bentleyiformis*, p. 87, Dogger of Hohen-Aschau; FINKELSTEIN. *T. styriaca*, *T. macrescens*, *T. hoernesii*, n. spp., Tertiary, Vienna Basin; DREGER, p. 187. *T. (?) inconstans*, n. sp., Ohio; HERRICK, p. 24, pls. xi, fig. 18, & iii, figs. 8 & 9.

Terebratulina karreri, n. sp., Vienna Tertiaries; DREGER, p. 190.

Waldheimia stelechoïdes, Dogger of Hohen-Aschau; FINKELSTEIN, p. 91.

MEGATHYRIDÆ.

Cistella transversa, n. n., Touraine (= *Argiope transversa*, D. & D., 1886); DOLLFUS & DAUTZENBERG, p. 246, pl. xi, fig. 2. *C. interponens*, n. sp., Tertiary, Vienna Basin; DREGER, p. 186.

THECIDEIDÆ.

Thecidea acuminata, n. sp., Touraine; DOLLFUS & DAUTZENBERG, p. 243, pl. xi, fig. 1. *T. lotharingicum*, n. sp., St. Julien-lès-Metz; FRIEN, p. 69.

POLYZOA.

BY

WILLIAM E. HOYLE, M.A., F.R.S.E.

- AGASSIZ, A. Three Cruises of the Blake. Bull. Mus. C. Z. xiv, xv, pp. xxii, 314, & 220, 545 figs. and maps; also separately, with title—A Contribution to American Thalassography. Three Cruises of the United States Coast and Geodetic Survey Steamer "Blake," in the Gulf of Mexico, in the Caribbean Sea, and along the Atlantic Coast of the United States, from 1877 to 1880. Boston, New York, & London: 1888, 8vo.
- BRAEM, F. Untersuchungen über die Bryozoen des süßsen Wassers. Zool. Anz. xi, pp. 503-509 & 533-539; abstr., J. R. Micr. Soc. 1888, pp. 937 & 938.
- COOPER, W. F. Tabulated List of Fossils known to occur in the Waverly of Ohio. Bull. Denison Univ. iv, pp. 123-129. [*Polyzoa*, pp. 129 & 130.]
- EHLERS, E. Au sujet du genre *Delagia*. Arch. Z. expér. (2) vi, pp. xlv, & xlvi.
- ETHERIDGE, R. Fossils of the British Islands, stratigraphically and zoologically arranged. Vol. 1. Palæozoic. Oxford: 1888, 4to, viii & 468 pp. [*Polyzoa*, pp. 71-73, 147, 148, 245-250, 358, 359, 411, 412, 457, & 458.]
- FOERSTE, A. F. Sections of Fossils. Science, xi, p. 22.
- FREESE, W. Anatomisch-histologische Untersuchung von *Membranipora pilosa*, L., nebst einer Beschreibung der in der Ostsee gefundenen Bryozoen. Arch. f. Nat. 1888, 1 (i), pp. 1-42, 2 pls.; also separately, as Kiel. Inaug. Diss., Berlin: 1888, 8vo.; abstr., J. R. Micr. Soc. 1889, pp. 47 & 48.
- GAUTIER, —, & LAMBERT, —. Notes pour servir à l'histoire du terrain de craie dans le sud-est du bassin anglo-parisien. Par M. A. Peron. Avec notes et descriptions d'Echinides nouveaux ou peu connus. Bull. Soc. Yonne, xli, pp. 145-366.
- GIARD, A. Le Laboratoire de Wimereux en 1888 (Recherches fauniques). Bull. Sci. Fr. Belg. pp. 492-513.
-

GUERNE, J. DE. Campagnes scientifiques du yacht monégasque L'Hirondelle. Troisième Année 1887. Excursions zoologiques dans les îles de Fayal et de San Miguel (Açores). Paris : 1888, 8vo, 111 pp., 1 pl., 9 cuts.

HALL, J. Description of new species of *Fenestellidae* of the Lower Helderberg, with explanations of plates illustrating species of the Hamilton Group described in the report of the State Geologist for 1886. 41 Ann. Rep. N. Y. Mus., pp. 391, &c. [unpaged], pls. viii-xv.

HALL, J., & SIMPSON, G. B. Palæontology of New York. VI. Corals and *Bryozoa*, containing descriptions and figures of species from the Lower Helderberg, Upper Helderberg, and Hamilton Groups : Albany : 1887, 4to, 298 pp., 66 pls.

HARMER, S. Sur *Cephalodiscus*. Bull. Sci. Fr. Belg. i, pp. 272 & 273. [Review, cf. Zool. Rec. xxiv, *Pol.* p. 1.]

HEAPE, W. Preliminary Report upon the Fauna and Flora of Plymouth Sound. J. Mar. Biol. Ass. ii, pp. 153-193. [*Polyzoa*, pp. 186 & 187.]

HINCKS, T. The *Polyzoa* of the St. Lawrence: a Study of Arctic Forms. Ann. N. H. (6) i, pp. 214-227, pls xiv & xv.

JAMES, J. F. Sections of Fossils. Science, xi, p. 50.

JOLIET, L. Études anatomiques et embryologiques sur le *Pyrosoma giganteum*, suivies de recherches sur la Faune des Bryozoaires de Roseoff et de Menton. Paris : 1888, 8vo, 116 pp., 5 pls.

JOYEUX-LAFFUIE, J. (1) Sur le *Delagia chatopteri*, type d'un nouveau genre de Bryozoaires. C.R. cvi, pp. 620-623; abstr., J. R. Micr. Soc. 1888, p. 403. [Prelim. notice of (2).]

— (2) Description du *Delagia chatopteri* (J. J.-L.), type d'un nouveau genre de bryozoaires. Arch. Z. expér. (2) vi, pp. 135-154, pl. viii; prelim. notice, C.R. cvi, pp. 620-623; abstr., J. R. Micr. Soc. 1888, pp. 403, 936 & 937.

— (3) Au sujet du genre *Delagia*. Arch. Z. expér. (2) vi, pp. xlv & xlv.

JULLIEN, J. (1) Bryozoaires : in, Mission scientifique du Cap Horn, 1882-1883, vi, 92 pp., 15 pls. Paris : 1888, 4to.

— (2) Sur la sortie et la rentrée du polypide dans les zoécies chez les Bryozoaires Cheilostomiens Monodermiés. Bull. Soc. Z. Fr. xiii, pp. 67 & 68; abstr., J. R. Micr. Soc. 1888, p. 936.

— (3) Sur la *Cristatella mucelo*. Bull. Soc. Z. Fr. xiii, pp. 165 & 166; abstr., J. R. Micr. Soc. 1888, p. 936.

— (4) Sur quelques Bryozoaires d'eau douce. Mém. Soc. Z. Fr. i, pp. 231-244.

— (5) Du testicule chez la *Lepralia figularis*, Johnston, 1847, et des variétés de cet organe chez les Bryozoaires en général. T. c. pp. 270-273, pl. x.

- [JULIEN, J.] (6) Observations anatomiques sur les Caténicelles. *T. c.* pp. 274-280, pl. xi.
- KENDALL, P. F. The Pliocene Fossil *Polyzoa*. *Tr. Manch. Micr. Soc.* 1887, pp. 29-34. [Nothing new.]
- KEYES, C. R. On the Fauna of the Lower Coal Measures of Central Iowa. *P. Ac. Philad.* 1888, pp. 222-246, pl. xii. [*Polyzoa*, pp. 225 & 226.]
- KIRKPATRICK, R. (1) *Polyzoa* of Mauritius. *Ann. N. H.* (6) i, pp. 72-85, pls. vii-x.
- . (2) *Polyzoa* from Port Phillip. *Op. cit.* ii. pp. 12-21, pl. ii.
- . (3) Description of a New Species of *Retepora* from Port Western, Victoria. *T. c.* p. 269, cut.
- KOROTNEFF, A. Beiträge zur Spermatologie. *Arch. mikr. Anat.* xxxi, pp. 334-341, pl. xix; abstr., *J. R. Micr. Soc.* 1888, p. 566.
- KRAEPELIN, K. (1) Jahresbericht über die Bryozoen für 1884 und 1885. *Arch. f. Nat.* lii (3) 1886, pp. 231-262. [Issued 1888.]
- . (2) Bemerkung zu den Mittheilungen von F. Braem über Süßwasserbryozoen. *Zool. Anz.* xi, pp. 646 & 647.
- LO BIANCO, S. Notizie biologiche riguardanti specialmente il periodo di maturità sessuale degli animali del golfo di Napoli. *MT. z. Stat. Neap.* viii, pp. 385-440. [*Polyzoa*, pp. 406 & 407.]
- MACGILLIVRAY, P. *Polyzoa*: in, MCCOY, *Prodr. Zool. Vict.*, Dec. xvi, pls. 156-158; Dec. xvii, pls. 165-168.
- McINTOSH, W. C. Report on *Phoronis buskii*, n. sp., dredged during the Voyage of H.M.S. Challenger, 1873-76. Report on the Scientific Results of the Voyage of H.M.S. Challenger during the Years 1873-76. Vol. xxvii, part lxxv, 27 pp., 3 pls. London, Edinburgh, and Dublin: 1888, 4to.
- EHRLERT, D. P. Descriptions de quelques espèces dévoniennes du département de la Mayenne. *Bull. Soc. Angers*, xvii, pp. 65-120, pls. vi-x. [*Polyzoa*, pp. 104-109.]
- PERGENS, E. Contributions à l'histoire des bryozoaires et des hydrozoaires recents. *Bull. Soc. mal. Belg.* xxii, pp. lxxxv-xc; also *P.-v. Soc. Mal. Belg.* xvi. pp. cii-cvii.
- REINHARD, W. W. Ocherk stroeniya e razvetiya pr...snovodnich mipanok [Sketch of the structure and development of the Fresh-water *Bryozoa*]. *Trudui Kharkoff Univ.* xv, pp. 207-310.
- RIDLEY, S. O. Note on *Lophopus lendenfeldi*. *Ann. N. H.* (6) i, pp. 159 & 160.
- SAEFFTIGEN, A. Das Nervensystem der phylactolæmen Süßwasser-Bryozoen. *Zool. Anz.* xi, pp. 96-99; abstr., *J. R. Micr. Soc.* 1888, pp. 402 & 403.

- SHEPHEARD, T. The Development of the Fresh-water *Polyzoa*. Sci. Goss. xxiv, pp. 107-109, & 139, cuts. [Popular, nothing new.]
- *STUCKENBERG, A. (1) Koralli e Inshanke verkhnayago yarusy Srednerusskago Kammenougolnago ezvestnyaka [Corals and *Polyzoa* of the Upper Carboniferous Limestone of Middle Russia]. Protok. Kazan. Univ. (1886-87?), No. 92, 3 pp.
- (2) Anthozoen und Bryozoen des oberen Mittlerrussischen Kohlenkalks. Mém. Comité Géol. v, 54 pp., 4 pls. [Russian, with German abstract.]
- ULRICH, E. O. List of the *Bryozoa* of the Waverly Group in Ohio, Bull. Denison Univ. iv, pp. 61-96, pls. xiii & xiv.
- VIGELIUS, W. J. Zur Ontogenie der marinen Bryozoen. MT. z. Stat. Neap. viii, pp. 374-376, pl. xix; abstr., J. R. Micr. Soc. 1888, p. 936.
- VINE, G. R. (1) Notes on the *Polyzoa* of Caen and Ranville now preserved in the Northampton Museum. J. Northampt. Soc. v, pp. 1-24.
- (2) Notes on the *Polyzoa* of the Wenlock Shales. Part I. P. Yorks. Geol. Polyt. Soc. ix, pp. 179-201, pl. xii, 1887.
- (3) Note on the Palæontology of the Wenlock Shales of Shropshire. T. c. pp. 224-248.
- (4) Notes on Classifications of Cyclostomatous *Polyzoa*, old and new. T. c. pp. 346-362. [Nothing new.]
- WHITELEGGE, T. (1) Notes on some Australian *Polyzoa*. Ann. N. H. (6) i, pp. 13-22. [Cf. Zool. Rec. xxiv, *Pol.* p. 4.]
- (2) Note on the Genus *Lophopus*. T. c. p. 62.
- (3) Note on a Species of *Polyzoa* (*Porina inversa*, Waters) from Port Jackson. P. Linn. Soc. N.S.W. (2) ii, p. 680.
- WIERZEJSKI, A. O mszywiolach (*Bryozoa*) Krajowych [Freshwater *Polyzoa* of Cracow]. Sprawozd. Kom. fizyogr. xxi (2) pp. 95-110.
- YOUNG, J. On the Structure of *Fistulipora incrustans*, Phill. (*F. minor*, McCoy). Ann. N. H. (6) i, pp. 237-247.
- ZACHARIAS, O. Abstr. of KRAEPELIN (1). [Cf. Zool. Rec. xxiv, *Pol.* p. 2.]
- ANON. Analytical Key to the Fresh-water *Polyzoa*. Am. Micr. J. ix, pp. 99-102. [Reprint, cf. Zool. Rec. xxiv, *Pol.* p. 4.]

ANATOMY AND PHYSIOLOGY.

A full description is given of the anatomy of a new *Phoronis* (*P. buskii*), 52 mm. long; M'INTOSH.

Membranipora pilosa has been exhaustively examined, its external appearance and internal structure are described, and three varieties characterised; FREESE.

In *Cristatella* and *Plumatella* the cavity of the supra-oesophageal ganglion is not completely surrounded by nervous elements, but has endothelium on the oesophageal side. The contained fluid is in communication with the body-cavity, and does not coagulate under the influence of reagents. The distribution of the nerves is described; SAEFFTIGEN.

The colonies of *Cristatella* are unisexual; the foot is not a true foot, but motion may take place either in the direction of its length or of its breadth; JULLIEN (3).

The operculum not only serves to close the orifice of the zoecium, but also to close the cavity into which the compensatory water penetrates when the polypide is exerted; JULLIEN (2).

The conclusions of La Valette St. George on spermatogenesis are in the main confirmed by researches on *Alcyonella*; KOROTNEFF.

The formation of young buds is always connected with the presence of older ones; the inner layer of the bud becomes ectoderm, the outer becomes the inner epithelium of the wall of the cystid, the cells of which give rise to muscles of integument and gut, retractor muscles and filaments connecting polypid and cystid. Different forms of colonies related to varying rapidity in budding. The statoblast forms a single primary individual, which forms a stock by gemmation. Spermatozoa develop not in the funiculus, but in the septa; BRAEM. Criticism regarding question of priority; KRAEPÉLIN (2).

Investigations on the development of *Bugula calathus* confirm in the main Barrois' results; the hypoblast does not seem to take part in the formation of the bud, as maintained by Ostrooumoff; VIGELIUS.

Some points in the terminology of Kraepelin (*cf.* Zool. Rec. xxiv, Pol. p. 2), and in his treatment of various genera, especially *Fredericella*, are criticised by JULLIEN (4).

MS. of Desmarest and Lesueur explanatory of certain rare plates; PERGENS.

Utility of sections in study of fossil forms maintained; FOERSTE. Reply; JAMES.

GEOGRAPHICAL DISTRIBUTION.

Wenlock Beds. Catalogue of fauna; VINE (3): 1 new Polyzoon; *id.* (2).
France. New localities for various fresh-water species; JULLIEN, (4) p. 244.

Caen and Ranville. 33 Jurassic forms; VINE (1).

Roscoff and Mentone. JOLIET.

Cracow. Fresh-water species; WIERZEJSKI.

Azores, Fuyal. *Plumatella repens*; GUERNE, p. 29.

Mauritius. Notes on numerous forms; 21 new species, 2 new genera; KIRKPATRICK (1).

Philippines. *Phoronis buskii*, n. sp.; M'INTOSH.

Victoria. Many *Celleporæ* figured, 9 n. spp.; MACGILLIVRAY.

Port Western, Victoria. *Retepora sinuosa*, n. sp.; KIRKPATRICK (3).

Port Phillip. Notes on several forms, 4 new species; *id.* (2).

Cape Horn. Elaborate account of *Polyzoa* collected by the French expedition ; many new genera and species ; JULLIEN (1).

Deep water forms from American coast, with 23 figs. ; AGASSIZ, pp. 78-83.

Iowa. Several species from the Coal Measures ; KEYES.

Ohio. List with 24 new species from Waverly formation ; ULRICH. Tabulated list ; COOPER.

St. Lawrence. 4 new species, 1 new genus ; HINCKS.

CLASSIFICATION.

JULLIEN (1) adopts the following arrangement of the group :—

- | | | | |
|---------------------------|---|-----------------------|---------------------------|
| 1. BRYOZOA LOPHOPODA | { | <i>Caduca.</i> | |
| | | <i>Perstita.</i> | |
| 2. BRYOZOA PALUDICELLINA. | | | |
| 3. BRYOZOA CTENOSTOMATA | { | <i>Utricularina</i> | { <i>Campilonemida.</i> |
| | | <i>Halcyonellina.</i> | { <i>Orthonemida.</i> |
| 4. BRYOZOA NORODONIANA. | | | |
| 5. BRYOZOA CHEILOSTOMATA | { | <i>Monodermata</i> | { <i>Inovicellata.</i> |
| | | | { <i>Subovicellata.</i> |
| | | | { <i>Superovicellata.</i> |
| | { | <i>Diplodermata</i> | { <i>Anopesiata.</i> |
| | | | { <i>Opesiata</i> |
| | | | { <i>Opesiulata.</i> |
| 6. BRYOZOA CYCLOSTOMATA | { | <i>Tubulinata.</i> | |
| | | <i>Fasciculinata.</i> | |
| | | <i>Foraminata.</i> | |

VERMIFORMIA.

Phoronis buskii, n. sp., Philippines ; M'INTOSH.

EUPOLYZOA.

ENTOPROCTA.

PEDICELLINIDÆ.

Barentsia major, n. sp., St. Lawrence ; HINCKS, p. 226, pl. xv, fig. 2.

Pedicellina hirsuta, *P. australis*, n. sp., Hoste I., Orange Bay ; JULLIEN, (1) p. 13.

ECTOPROCTA.

PHYLACTOLEMATA.

PLUMATELLIDÆ.

Discovery of *Lophopus lendenfeldi* claimed ; WHITELEGGE (2) ; see also RIDLEY.

GYMNOLÆMATA.

CYCLOSTOMATA.

TUBULIPOREIDÆ.

Bidiastophora torquata, n. sp., Port Phillip ; KIRKPATRICK, (2) p. 15, pl. ii, fig. 2.

Entalophora escharaforma, n. sp. f, Buildowns, Salop, Wenlock, Beds ; VINE, (2) p. 193, pl. xii, figs. 21 & 22.

Polypora impressa, n. sp., fossil, Ohio ; ULRICH, p. 72, pl. xiii, fig. 8.

HETEROPORIDÆ.

Heteropora mæandrina, n. sp., Port Phillip ; KIRKPATRICK, (2) p. 16, pl. ii, fig. 8.

Rhombopora ohioensis, n. sp., fossil, Ohio, ULRICH, p. 90, pl. xiv, fig. 4.

IDMONEIDÆ.

Idmonea radicata, *I. tortuosa*, n. spp., Mauritius ; KIRKPATRICK, (1) p. 83, pls. ix, fig. 2, & x, fig. 2.

CYSTODICTYONIDÆ.

Cystodictya zigzag, p. 81, pl. xiii, fig. 11, *C. simulans*, p. 81, pl. xiii, fig. 10, *C. angusta*, p. 82, pl. xiv, fig. 20 ; fossil, Ohio ; ULRICH.

HORNERIDÆ.

Hornera spinigera, n. sp., Mauritius ; KIRKPATRICK, (1) p. 83, pl. x, fig. 1.

GALEIDÆ, n. fam.

Disporella, Gray, incorrectly written *Discoporella*. *D. spinulosa*, n. sp., off Magellan's Strait ; JULLIEN, (1) p. 83. *D. venabulum*, n. n., = *Discoporella grignonensis*, Busk (nec Edwards) ; *id. t. c.* p. 84.

FENESTELLIDÆ.

Fenestella herrickana, p. 63, pl. xiii, fig. 2, *F. meekana*, p. 64, pl. xiii, fig. 1, *F. foliata*, p. 67, pl. xiii, fig. 4, *F. subflexuosa*, p. 68, pl. xiii, fig. 6, *F. cavernosa*, p. 69, pl. xiii, fig. 7, fossil, Ohio ; ULRICH.

Fistulipora incrustans, Phill., described ; YOUNG.

Streblotrypa obliqua, p. 85, pl. xiv, fig. 9, *S. hertzeri*, p. 85, pl. xiv, fig. 8, *S. amplexa*, p. 86, pl. xiv, fig. 13, *S. multipora*, p. 87, pl. xiv, fig. 11, *S. striata*, p. 87, pl. xiv, fig. 12, *S. regularis*, p. 88, pl. xiv, fig. 14, *S. denticulata*, p. 88, pl. xiv, figs. 18 & 19, fossil, Ohio ; ULRICH.

Tectulipora, n. subg. ; HALL, expl. of pl. ix.

CTENOSTOMATA.

VALKERIIDÆ.

Monastesia, n. g., for *M. pertenuis*, n. sp., Orange Bay; JULLIEN, (1) p. 15.

CYLINDRÆCHIDÆ.

Cylindræcium altum, n. sp., Port Phillip; KIRKPATRICK, (2) p. 19, pl. ii, fig. 7.

DELAGIIDÆ, n. fam.

Delagia, n. g.: erect, with swellings, on each of which is a zoecium; zoecia adherent, urceolate; orifice subterminal, oval; on either side of it is a globular organ to which the name "spherule" is given; this consists of a vesicle formed both of ectocyst and endocyst, enclosing a fluid; tentacles, 12-14; gizzard present: for *D. chatopteri*, n. sp., commensal in the tube of *Chatopterus valencinii*; JOYEUX-LAFFUE (1,2). *Delagia* = *Hypophorella*, Ehlers; JOYEUX-LAFFUE (3); EHLERS.

VESICULARIIDÆ.

Amathia wilsoni, *A. pinnata*, n. spp., Port Phillip; KIRKPATRICK, (2) pp. 18 & 19, figs. 4 & 5.

Bowerbankia francorum, *B. hahni*, *B. minutissima*, n. spp., Orange Bay; JULLIEN, (1) pp. 18-21.

Buskia australis, n. sp., Orange Bay; *id. t. c.* p. 22.

CHEILOSTOMATA.

ÆTEIDÆ.

Ætea fuegiensis, p. 23, pl. vii, fig. 7, *Æ. curta*, *Æ. australis*, p. 26, n. spp., Orange Bay; JULLIEN (1).

CELLULARIIDÆ.

Sempolellaria minuta, n. sp., Mauritius; KIRKPATRICK, (1) p. 73, pl. ix, fig. 3.

BICELLARIIDÆ.

Bugula hyadesi, n. sp., Orange Bay; JULLIEN, (1) p. 71, pl. vii, figs. 4-6.

Corynoporella, n. g. Stems slender, cells in single series, facing one way, dichotomous; zoecia clavate, each cell springing from dorsal surface of the one beneath, attenuated below, tubular; aperture at top, comparatively short. Avicularia articulated, at one side of aperture; for *C. tenuis*, n. sp., St. Lawrence; HINCKS, p. 215, pl. xv, fig. 1.

Diplæcium, n. g. "Zonarium dichotomous. Zoecia in pairs back to back, each pair at right angles to those above and below; the pairs sepa-

rated by short cylindrical corneous internodes ; orifice of cell with notch in lower border" ; *Flustra simplex*, n. sp., Mauritius ; KIRKPATRICK, (1) p. 73, pl. vii, fig. 1.

FLUSTRIDÆ.

Here are included :—*Eucrateidæ*, *Cellulariidæ*, *Bicellariidæ*, *Notamiidæ*, *Flustridæ*, *Membraniporidæ*, *Gemellariidæ*, and *Farciminariadæ* of previous authors ; JULLIEN, (1) p. 68.

Carbasea ramosa, n. sp., Orange Bay ; *id.* t. c. p. 75, pl. iv, figs. 2-4.

Diachoris hyadesi, *D. maxilla*, n. spp., Orange Bay ; *id.* t. c. p. 74, pls. vii, figs. 1-3, & xi, fig. 4.

MEMBRANIPORIDÆ.

Membranipora defensa, *M. marginalis*, *M. mauritiana*, n. spp., Mauritius ; KIRKPATRICK, (1) p. 74, pls. viii, fig. 8, & vii, figs. 2 & 3. *M. hyadesi*, n. sp., Orange Bay ; JULLIEN (1), p. 76, pls. vi, fig. 1, & viii, figs. 5 & 6.

CRIBRILINIDÆ.

Membraniporella crassicosta, n. sp., St. Lawrence ; HINCKES, p. 216, pl. xiv, fig. 5.

OPESIULIDÆ, n. fam.

Andreella, n. g., for *Micropora uncifera*, Busk ; JULLIEN, (1) p. 80, pls. iv, fig. 9, & xiv, figs. 1-3.

MICROPORELLIDÆ.

Stephanophora, n. g. "Zoœcia with semicircular orifice, lower margin straight, not dentate, without sinus ; peristome raised posteriorly ; from anterior margins of wall thus formed a process is given off on each side, uniting in front to form with posterior wall a tubular peristome, incomplete below. From lower margin of peristome a broad branched process is given off, uniting with processes from other zoœcia to form a secondary cribriform roof. Special pore wanting" ; for *S. cribrispinata*, n. sp., Mauritius ; KIRKPATRICK, (1) p. 75, pl. x, fig. 5.

PORINIDÆ.

Anarthropora horrida, n. sp., Mauritius ; KIRKPATRICK, (1) p. 76, pl. viii, fig. 2.

Porina inversa, Waters, correction regarding the shape of the aperture ; WHITELEGGE (3).

FENESTRULINIDÆ, n. fam.

Fenestrulina, n. g., for *Cellepora malusii*, Aud., and *Lepralia personata*, Busk; JULLIEN, (1) p. 37, pl. xv, figs. 1-3. *F. hyadesi*, n. sp., off Magellan's Strait; *id. t. c.* p. 44, pl. iv, fig. 7.

Inversiula, n. g., for *I. nutriz*, n. sp., Beagle Channel; *id. t. c.* p. 44, pl. iv, fig. 8.

RETEPORIDÆ.

Retepora tenuis, *R. hincksii*, n. spp., Mauritius; KIRKPATRICK, (1) p. 82, pl. vii, figs. 6 & 7. *R. sinuosa*, n. sp., Port Western; *id.* (3).

MYRIOZOIDÆ.

Schizoporella ampla, n. sp., Mauritius; KIRKPATRICK, (1) p. 76, pl. vii, fig. 4.

DIAZEUXIDÆ, n. fam.

Diazeuxia, n. g., for *Cellepora hyalina*, L.; JULLIEN, (1) p. 28. *D. reticulans*, n. n., = *Lepralia hyalina* var. *discreta*, Busk; *id. t. c.* p. 33, pl. iv, fig. 5.

ESCHARIDÆ.

Annulosia, n. g., for *A. australis*, n. sp., Orange Bay; JULLIEN, (1) p. 59, pls. i, fig. 5, & ix, figs. 3 & 4.

Escharoides discus, n. sp., Mauritius; KIRKPATRICK, (1) p. 82, pl. ix, fig. 6.

Exochella, n. g., for *Mucronella tricuspis*, Hincks, and *E. longirostris*, n. sp., Orange Bay; JULLIEN, (1) p. 55, pls. iii, figs. 1-4, & ix, fig. 2.

Hawwellia victoriensis, n. sp., Port Phillip; KIRKPATRICK, (2) p. 14, pl. ii, fig. 1.

Lepralia judex, *L. mosaica*, n. spp., Mauritius; *id.* (1) pp. 76 & 77, pl. viii, figs. 4 & 6. *L. collaris*, n. sp., Orange Bay; JULLIEN, (1) p. 57, pl. iii, fig. 7.

Mucronella porelliformis, *M. cothurnica*, n. spp., Mauritius; KIRKPATRICK, (1) p. 81, pl. ix, figs. 1 & 5.

Phylactella columnaris, n. sp., Mauritius; *id. t. c.* p. 79, pl. viii, fig. 3.

Porella proboscidea, n. sp., St. Lawrence; HINCKS, p. 223, pl. xiv, fig. 4. *P. hyadesi*, Orange Bay, *P. maloninensis*, Falkland Is., n. spp.; JULLIEN, (1) pp. 56 & 57, pl. iii, figs. 5 & 6.

Smittia tubuli, p. 79, pl. x, fig. 6, *S. rostriformis*, p. 80, pl. viii, fig. 7, *S. lativicularia*, p. 80, pl. x, fig. 3, *S. murarmata*, p. 80, pl. viii, fig. 5, n. spp., Mauritius; KIRKPATRICK (1). *S. monacha*, *S. sigillata*, *S. purpurea*, n. spp., Patagonia; JULLIEN, (1) pp. 52-54, pl. ii, figs. 1-6.

BUFFONELLIDÆ, n. fam.

Buffonella, n. g., for *B. rimosa*, n. sp., Orange Bay; JULLIEN, (1) p. 47, pl. i, fig. 1.

LACERNIDÆ, n. fam.

Lacerna, n. g., for *L. hosteensis*, n. sp., Hoste I., Orange Bay ; *id. t. c.* p. 48, pl. i, fig. 1.

Phonicosia, n. g., for *P. jousseaumei*, n. sp., off Magellan's Strait ; *id. t. c.* p. 51, pl. i, fig. 6.

ROMANCHEINIDÆ, n. fam.

Romancheina, n. g., for *R. martiali*, n. sp., Beagle Channel ; *id. t. c.* p. 60, fig. v, figs. 1 & 2.

ARACHNOPUSIDÆ, n. fam.

Arachnopusia, n. g., for *Oribilina monoceros*, Busk. ; *id. t. c.* p. 62, pl. iii, figs. 8 & 9.

OSTHIMOSIDÆ, n. fam.

Osthimosia, n. g., for *O. otopeta*, p. 64, pl. i, fig. 3, *O. coeæa*, p. 65, pls. i, fig. 4, & xiii, figs. 1-4, n. spp., Orange Bay ; *id. t. c.*

HIPPOTHORIDÆ.

Hippothora devonica, n. sp., France, Devonian ; EHLERT, p. 104, pl. x, fig. 2.

Terebripora vetusta, n. sp., France, Devonian ; *id.* p. 108, pl. x, fig. 3.

CELLEPORIDÆ.

Cellepora simplex, Port Phillip Heads, *C. diadema*, *C. spicata*, *C. cidaris*, pl. clxv, figs. 1-4, n. spp., *C. verrucosa*, *C. foliata*, *C. prolifera*, pl. clxvi, figs. 1, 2, & 4, n. spp., Portland, *C. lirata*, *C. magnirostris*, pl. clxvii, figs. 3 & 4, Port Phillip Heads ; MACGILLIVRAY.

INCERTÆ SEDIS.

Pinnatopora intermedia, p. 74, pl. xiv, fig. 1, *P. simulatrix*, p. 75, pl. xiv, fig. 3, *P. curvata*, p. 76, pl. xiv, fig. 4, *P. subangulata*, p. 76, pl. xiv, fig. 2, *P. minor*, p. 77, pl. xiv, fig. 7, fossil, Ohio ; ULRICH.

Teniodictya interpolata, n. sp., fossil, Ohio ; ULRICH, p. 80, pl. xii, fig. 9.



CRUSTACEA.

BY

CECIL WARBURTON, B.A.

I.—LIST OF PUBLICATIONS.*

- AGASSIZ, A. (1) Deep Sea Fauna in "The Cruises of the 'Blake.'" Bull. Mus. C. Z. xiv, p. 153.
Pelagic Fauna on p. 171.
- . (2) Characteristic Deep Sea Types of *Crustacea*, in "The Cruises of the 'Blake.'" *Op. cit.* xv, p. 37, figs. 225-259.
- AMANS, P. C. Organes de la Locomotion aquatique. Ann. Sci. Nat. vi, No. 2.
- BARROIS, TH. (1) Remarques sur le dimorphisme sexuel chez quelques Amphipodes du genre *Mæra*. Bull. Soc. Z. Fr. xiii, No. 2, pp. 57-59. [Abstr. in J. R. Micr. Soc. 1888, p. 949.]
- . (2) Note préliminaire sur la faune carcinologique des Açores. Lille: 1888, 8vo, 14 pp.
- . (3) Catalogue des Crustacés marins recueillis aux Açores durant les mois d'Août et Septembre, 1887. Lille: 1888, 8vo, 110 pp., 4 pls., & 8 figs. dans le texte.
111 species; 2 new species.
- . (4) Note sur l'histoire naturelle des Açores.—De l'adaptation de l'*Orchestia littorea* à la vie terrestre. Bull. Soc. Z. Fr. xiii, No. 1, pp. 19-22.
- , & MONIEZ, R. Matériaux pour servir à l'étude de la Faune des eaux douces des Açores. IV. *Crustacea*. Lille: 1888, 8vo, 12 pp.
- BATE, C. SPENCE. Report on the *Crustacea Macrura* collected by H.M.S. 'Challenger' during the years 1873-76. Rep. Zool. Chall. Exp. vol. xxiv, 1888.

* An asterisk prefixed to a quotation signifies that the Recorder has not seen the Journal or Work referred to.

- BEDDARD, F. E. On the minute structure of the Eye in certain *Cymatoidæ*. Tr. R. Soc. Edinb. xxxiii, pp. 443-452, 1 pl. [Abstr. in J. R. Micr. Soc. 1888, p. 730.]
- BERGENDAL, D. (1) Über abnorme Formen der ersten abdominalen Anhänge bei einigen Krebsweibchen. Bih. Sv. Ak. Handl. xiv (1888) iv, No. 3, 35 pp., 1 pl. [See J. R. Micr. Soc. 1889, p. 53.]
- . (2) Männliche Copulationsorgane am ersten abdominalen Somite einiger Krebsweibchen. Cefv. Ak. Förh. 45th Arg., No. 5, pp. 343-346.
- LO BIANCO. Notizie biologiche riguardanti specialmente il periodo di maturità sessuale degli animali del golfo di Napoli. [*Crustacea*, p. 407.] MT. z. Stat. Neap. viii, p. 377.
- BIEDERMANN, W. Ueber die Innervation der Krebssee. SB. Ak. Wien, xcvii (1888), pp. 49-82, 4 pls. [Abstr. in J. R. Micr. Soc. 1888, p. 947.]
- BONNIER, JUL. (1) Sur les espèces de *Galathea* des côtes de France. C.R. evi, No. 24, pp. 1686-1689. [Transl. in Ann. N. H. (6) ii (July), pp. 123-125.]
- . (2) Catalogue des Crustacés malacostracés recueillis dans la baie de Concarneau. Sep., Paris (Doin): 1888, 8vo, 190 pp. [See Zool. Rec. xxiv, *Crust.*, BONNIER.]
- . (3) Catalogue des Crustacés malacostracés de Concarneau (Suite). Bull. Sci. Nord. (2) x, No. 7, 1888, pp. 296-356.
- BOUVIER, E. (1) Sur l'appareil circulatoire du *Portunus puber*. Bull. Soc. Philom. (7) xii, No. 2, pp. 53-55.
- . (2) Sur l'appareil circulatoire de la Langouste (*Palinurus vulgaris*) et du Tourteau (*Platycarcinus pagurus*). T. c. pp. 60-62.
- . (3) Sur la Circulation de l'Ecrevisse. C.R. Soc. Biol. v, p. 156.
- . (4) Sur l'appareil circulatoire de l'Ecrevisse. Bull. Soc. Philom. (7) xii, No. 2, pp. 52 & 53.
- . (5) Sur l'appareil circulatoire des *Maia*, *Grapsus*, *Stenorhynchus*, *Pagurus*, &c. T. c. pp. 62-72.
- . (6) Sur le système nerveux des Crustacés décapodes. Op. cit. No. 3, pp. 111-114.
- BOVALLIUS, C. Contributions to a Monograph of *Amphipoda Hyperidea*. Part I. Stockholm: 1887, 4to, 72 pp., 10 pls.
- *BRADY, G. S. Notes on *Entomostraca*. Fifth Annual Report of the Fishery Board of Scotland: Appendix F, No. xi, pp. 328-330, 1 pl.
- BROOK, G. Abstract of his paper on the Reproduction of lost parts in the Lobster. J. R. Micr. Soc. 1888, iii, p. 414; also in Am. Nat. xxii (May), p. 465.
- CANT, EUG. (1) Abstract of his paper on *Aplostoma brevicauda*. CB. Bakt. Parasit. 1 Jahrg., 1 Bd., No. 14, p. 426.

- [CANU, EUG.] (2) Sur les *Hersiliidae*, famille nouvelle de Copépodes commensaux. C.R. cvii, pp. 792 & 793.
- (3) Les Copépodes libres marines du Boulonnais. Bull. Sci. Nord. (3) i, Nos. 1 & 3, pp. 78-106.
- CATTANEO, G. (1) Sugli "Amebociti" dei Crostacei. Boll. scient. x, No. 1, pp. 15-18. [Abstr. in Zool. Anz. xi (1888), pp. 452-455; J. R. Micr. Soc. (1888), p. 949; Arch. Ital. Biol. x, p. 267.]
- (2) Extract of his paper on the Structure of the Intestine of *Decapoda*. Arch. Ital. Biol. 1888, p. 254; also abstr. in J. R. Micr. Soc. 1888, p. 729. [See Zool. Rec. xxiv, Crust., CATTANEO.]
- CHEVREUX, E. (1) Sur quelques Crustacés amphipodes recueillis aux environs de Cherchell. C.R. Ass. Fr. Sci. 1888 (17^e Session), pp. 343-353, 1 pl.
- (2), & DE GUERNE, J. Sur un Amphipode nouveau (*Cyrtophium chelonophilum*), commensal de *Thalassochelys caretta*. C.R. cvi, No. 9, pp. 625-628. [Extr., Rev. Sci. (3) xli, No. 10, p. 315; abstr., J. R. Micr. Soc. 1888, iii, p. 416.]
- (3) Note sur la présence de l'*Orchestia chevreuxi* (de Guerne), à Ténériffe; description du mâle de cette espèce, et remarques sur la locomotion de l'*Orchestia littorea* (Montague). Bull. Soc. Z. Fr. xiii (1888), pp. 92-96, 6 figs. [Abstr. in J. R. Micr. Soc. 1888, p. 949.]
- (4) Contribution à l'étude de la distribution géographique des Amphipodes sur les côtes de France. Bull. Soc. Étud. sci. Paris, 1888, pp. 12-23.
- (5) Sur quelques Crustacés Amphipodes provenant d'un dragage de l'Hirondelle au large de Lorient. Bull. Soc. Z. Fr. xiii, No. 2, pp. 39-42.
- CLAUS, C. (1) Bemerkungen über marine Ostracoden aus den Familien der Cypridinen und Halocypriden. Arb. z. Inst. Wien, viii, pp. 149-154.
- (2) Abstract of his paper on *Apseudes* and the *Tanaidae*. J. R. Micr. Soc. 1888, iii, p. 416. [See Zool. Rec. xxiv, Crust., CLAUS.]
- (3) Abstract of his paper on *Lernæascus* and the *Philichthyæ*. J. R. Micr. Soc. 1888, ii, p. 217. [See Zool. Rec. xxiv, Crust., CLAUS.]
- CUÉNOT, M. L. Études sur le sang, son rôle et sa formation dans la série animale. 2^e partie. Invertébrés. Arch. Z. expér. v (1888), pp. xliii-xlvii. [Abstr. in J. R. Micr. Soc. (1888), p. 557.]
- *DADAY, EUG. *Crustacea Cladocera faunæ hungariæ*. Budapest: 1888, 4to, 4 pls.
- DAHL, F. Die Cytheriden der westlichen Ostsee. Z. Jahrb. Abth. f. Syst. 3 Bd., 4 Hft., pp. 597-638, 4 pls. [Sep., Habilitat-Schr. (Kiel).]

DELLA VALLE, A. Sopra le ghiandole glutinifere e sopra gli occli degli Ampeliscidi del Golfo di Napoli. Nota (6 pp.). Extr. in Atti Soc. Mod. Mem. (3) vii, 1888.

DOLLFUS, AD. (1) Description d'une espèce nouvelle du genre *Philoscia*, *P. corsica*. Bull. Soc. Étud. Sci. Ann. ii (1888), 1 sem., pp. 10 & 11.

— (2) Catalogue provisoire des espèces françaises d'Isopodes terrestres. T. c. Paris: 1888.

— (3) Sur quelques Crustacés Isopodes du littoral des Açores (3^{me} Campagne de l'Hirondelle). Bull. Soc. Z. Fr. xiii, No. 1, p. 35.
5 species; 1 new species.

*EKOY, K. N. Opyetye zaraseniya reshtou tzezklopov. [Infection of *Cyclops* by Nematodes.] Trudui Lab. Zool. Mus. Mosk. 1886, pp. 96-99.

EYLMANN, E. Beitrag zur Systematik der europäischen Daphniden. Ber. Freiburg Ges. ii, pp. 61-148, 3 pls.

FEWKES, J. W. (1) A troublesome Parasite of a Brittle Starfish (*Amphiura squamata*). Nature, xxxvii, No. 951, pp. 274 & 275.

— (2) New Parasite of *Amphiura*. P. Bost. Soc. xxiv, pp. 31-33.

FISCHER, P. Sur une monstruosité du crabe tourteau (*Platycarcinus pagurus*). Bull. Soc. Z. Fr. xiii, No. 3, pp. 69-73.

GARBINI, A. Abstract of his paper on the Structure of *Cyprinida*. J. R. Micr. Soc. 1888, i, p. 36. [See Zool. Rec. xxiv, Crust., GARBINI.]

GAVINO, C. Catalogo delle specie dei Crostacei raccolte nel viaggio di circumnavigazione della R. Corvetta Caracciolo. Roma (Spallanzani): 1888, 8vo, 8 pp.

GEHUCHTEN, A. v. Structure intime de la cellule musculaire striée [*Astacus*, &c.]. Arch. Anat. Phys. 1888, pp. 560-564. [Abstr. in J. R. Micr. Soc. 1888, p. 941.]

GERSTAECKER, A. *Arthropoda* (Bronn's Klassen u. Ordnungen). Leipsic & Heidelberg: 1888, 8vo.

GIARD, A. (1) Sur la castration parasitaire des Eukyphotes des genres *Palæmon* et *Hippolyte*. C.R. cvi, No. 7, pp. 502-505. [Transl. in Ann. N. H. (6) i, No. 4, p. 314; abstr. in J. R. Micr. Soc. 1888, iii, p. 414.]

— (2) La Castration parasitaire. (Nouvelles recherches). Bull. Sci. Nord. (3) 1887, i, Nos. 1-3, pp. 12-45. [Abstr. in MT. Ver. Frankfurt-a.-O., 6 Jahrg., No. 4, p. 92.]

— (3) Abstract of his paper on "Parasites rhizocéphales." CB. Bakt. Parasit. 1 Jahrg., 1 Bd., No. 14, p. 427.

GIARD, A., & BONNIER, J. (1) Sur quelques espèces nouvelles de *Céponiens*. C.R. cvii, No. 1, p. 44. [Transl. in Ann. N. H. (6) ii (August), pp. 192-194; abstr. in J. R. Micr. Soc. 1888, p. 731.]

[GIARD, A., & BONNIER, J.] (2) Sur deux nouveaux genres d'Epicarides. C.R. cvi, No. 4, pp. 304-306. [Transl. in Ann. N. H. (6) i, p. 234; abstr. in J. R. Micr. Soc. 1888, p. 217.]

The same authors on the same subject in Bull. Sci. Nord. (3) i, Nos. 1-3, pp. 52-77, with 5 pls.

— & —. (3) Contributions à l'étude des Bopyriens. Lille: 1887, 4to. [Notice in Ann. N. H. (1888) i, p. 51.]

GIESBRECHT, W. Elenco dei Copepodi Pelagici raccolti dal tenente di vasello Gaetano Cherchia, &c. Rend. dell. R. Acc. dei Lincei, iv, 2^a serie, fasc. 9, pp. 284-287, fasc. 10, pp. 330-338.

GILES, G. M. Notes on a Voyage of the 'Investigator.' J. A. S. B. lvii (1888), p. 220, 7 pls.

11 new species of *Amphipoda*.

GILSON, G. Spermatogenèse des Arthropodes. La Cellule, iv (1888), pp. 351-446, 1 pl. [See J. R. Micr. Soc. p. 940.]

GOURRET, P. (1) Abstract of his paper on the Podophthalmatous Crustacea of the Bay of Marseilles. Ann. N. H. (1888) i, p. 66. [See Zool. Rec. xxiv, Crust.]

— (2) Abstract of his paper on Parasitic Crustacea. CB. Bakt. Parasit. 1 Jahrg., 1 Bd., No. 1, p. 335. [See Zool. Rec. xxiv, Crust.]

*DE GREGORIO, M. O. Nuovi Decapodi titonici. Nat. Sicil. iii, No. 4, p. 134.

GRIFFITHS, A. B. Problematical organs of *Invertebrata*. P. R. Soc. Edinb. xiv (1887), p. 230. [Abstr. in J. R. Micr. Soc. 1888, p. 714.]

GRIMM, O. A. O faune rakobraznuich Caspiickavo morya [Crustacean fauna of the Caspian]. Trudni St. Petersburg Nat. ii, pt. 1, pp. 8 & 9.

GROULT, P. Histoire naturelle de la France. 15^e partie. Acariens, Crustacés, Myriapodes. Avec figg. et 18 pls. Paris: 1888.

DE GUERNE, J. (1) Remarques au sujet de l'*Orchestia chevreuxi* et de l'adaptation des Amphipodes à la vie terrestre. Bull. Soc. Z. Fr. xiii, No. 2, pp. 59-66, 8 figs.

— (2) Diagnoses de deux *Diaptomus* nouveaux d'Algérie. Op. cit. No. 6, pp. 160-162.

— (3) Sur la Dissémination des Organismes d'eau douce par les Palmipèdes. CR. Ass. Fr. Sci. 1888, p. 339.

References to *Cladocera* and *Ostracoda*.

—, & RICHARD, J. Sur la distribution géographique du genre *Diaptomus*. C.R. cvii, No. 1, pp. 47-50. [Transl. in Ann. N. H. (6) ii (Aug.), p. 177; abstr. in J. R. Micr. Soc. 1888, p. 731.]

HANSEN, H. J. Malacostraca marina Grœnlandiæ occidentalis. Kjøbenhavn: 1887, 8vo, 226 pp. [From Vid. Medd.]

- HANSSON, C. AUG. Om förekomsten af *Limnadia lenticularis* (Linn.) på Nordkoster i norra Bohuslän. Öfv. Ak. Förh. xlv, No. 3, pp. 215 & 216.
- HEAPE, W. Preliminary Report upon the Fauna and Flora of Plymouth Sound. Journ. of Marine Biol. Ass. No. 2 (August, 1888). Plymouth. Crustacea, pp. 170-178.
- HEILPRIN, A. Contributions to the Natural History of the Bermuda Islands. P. Ac. Philad. 1888, pp. 302-328.
Including Crustacea—none new.
- HENDERSON, J. R. Report on *Anomura* collected by H.M.S. 'Challenger' during the years 1873-76. Rep. Zool. Chall. Exp. vol. xxvii, 221 pp., 18 pls.
- HERDMAN, W. A. Marine Biology and the Electric Light. Nature, xxxviii (1888), p. 130.
Crustacea taken off Liverpool.
- HERRICK, F. H. (1) The habits, colour variation, and development of *Alpheus*. J. Hopk. Univ. Circ. vii, No. 63, pp. 35-37. [Abstr. in J. R. Micr. Soc. 1888, p. 577.]
- . (2) The Abbreviated Metamorphosis of *Alpheus* (n. sp.), and its relation to the conditions of Life. J. Hopk. Univ. Circ. vii, No. 63, p. 34. [Abstr. in J. R. Micr. Soc. 1888, iii, p. 414.]
- . (3) Abstract of his paper on the Sponge Shrimp *Alpheus*. Am. Nat. xxii (March), p. 256.
- HESSE, —. Crustacés rares ou nouveaux des côtes de France. 37 Art. Ann. Sci. Nat. (7) v, Nos. 5-6, pp. 339-362.
No new species in this number.
- HICKSON, S. J. On a new species of the Genus *Atya* (*A. wickii*) from Celebes. Ann. N. H. 1888, pp. 357-367, pls. xiii & xiv.
- HILGENDORF, F. Über die Morphologie der Augenhöhle von *Gecarcinus* und über eine neue verwandte Gattung *Mystacocarcinus*. SB. nat. Fr. 1888, No. 2, pp. 26-29.
- HUDENDORFF, A. Einige Bemerkungen zu Dr. Eylmann's "Beitrag zur Systematik der europäischen Daphniden." Zool. Anz. xi, No. 28, pp. 315-317.
- IMHOF, O. E. Beitrag zur Kenntniss der Süsswasser Fauna der Vogesen. Zool. Anz. 1888, p. 565.
- JONES, T. RUP. Notes on the Palæozoic Bivalved *Entomostraca*. No. xxv. On some Silurian *Ostracoda* from Gotthland. 2 pls. Ann. N. H. (6) i (June), pp. 395-411, ii (Oct.), pp. 295-299.
- DE KERVILLE, H. G. Les Crustacés de la Normandie : espèces fluviales, stagnales et terrestres (1^{re} liste). Bull. Soc. Rouen, 1888, pp. 133-158; also sep., Rouen : 1888, 8vo.

- KINGSLEY, J. S. (1) Something about Crabs. *Am. Nat.* xxii (1888), pp. 888-896.
- . (2) The Development of *Crangon*. *T. c.* p. 241.
- . (3) Development of the Compound Eye of *Crangon*. Abstr. in *J. R. Micr. Soc.* 1888, p. 34. [See *Zool. Rec.* xxiv, *Crust.*]
- KIEHLER, R. Recherches sur la Structure du Pédoncule des Cirrhipèdes. *Rev. Biol.* No. 2 (1888), pp. 41-55.
- *KORCHAGEN, A. N. Fauna Moskovskex okrestnostee. I. Rakoob-saznyeya. [Fauna of the neighbourhood of Moscow. I. Crustacea.] *Trudui Lab. Zool. Mus. Mosk.* lii, pt. 2.
- LANKESTER, E. R. The Cœlom and the Vascular System of *Mollusca* and *Arthropoda*. *Nature*, xxxvii, p. 498. [Abstr. in *J. R. Micr. Soc.* 1888, p. 395.]
- LEIDY, J. (1) Parasitic Crustacea. (*Lerneonema procera*, n. sp.) *P. Ac. Philad.* 1888, p. 165.
- . (2) Note on *Lepas fascicularis*. *T. c.* p. 80.
- . (3) *Cirolana* feasting on the Edible Crab (*Callinectes hastatus*). *T. c.* p. 80.
- . (4) Habit of *Cirolana concharum*. *T. c.* pp. 124 & 125.
- . (5) A Crustacean Parasite of the Red Snapper (*Lutianus blackfordii*). [*Anchorella fasciculata*], with cut. *T. c.* pp. 138 & 139.
- . (6) Remarks on the Fauna of Beach Haven, N. J. [Including list of Crustacea; none new.] *T. c.* p. 329.
- . (7) Parasites of the Rock Fish. *T. c.* p. 166.
The parasite was *Ergasilus labracis*.
- LILLJEBORG, W. Description de deux espèces nouvelles de *Diaptomus* du nord de l'Europe. *Bull. Soc. Z. Fr.* xiii, No. 6, pp. 156-158.
- LOVETT, EDW. *Dromia vulgaris* in Cornwall. *Zool.* (3) xii (Aug.), pp. 312 & 313.
- MACKAY, W. J. The Intercoxal Lobe of Certain Crayfishes. *Q. J. Micr. Sci.* xxviii, pp. 495-499. [Abstr. in *J. R. Micr. Soc.* 1888, p. 577.]
- *MAEV, N. A. O Turkestanskom ryechnom rakye. [Crayfish of Turkestan rivers.] *Trudui Lab. Zool. Mus. Mosk.* 1886, p. 95.
- DE MAN, J. G. (1) Bericht über die im indischen Archipel von Dr. J. Brock gesammelten Decapoden u. Stomatopoden. Berlin (Nicolai): 1888, 8vo, 17 pls. [From *Arch. f. Nat.* 5 Jahrg. pp. 215-600.]
- . (2) Report on Podophthalmatous Crustacea of the Mergui Archipelago. *J. L. S.* xxii, No. 136, pp. 1-64, 3 pls.
Littoral Crustacea. 166 species; 38 new to science.
- . (3) Report on the Podophthalmatous Crustacea of the Mergui Archipelago. Pt. ii, 5 pls.; pt. iii, 4 pls.; pt. iv, 4 pls. *J. L. S.* xxii, Nos. 137-140, pp. 65, 129, 177, & 241.
30 new species; n. g. *Dioxippe*.

- MARCHAL, P. Abstract of his paper on Excretion in Brachyurous Crustacea. J. R. Micr. Soc. 1888, ii, p. 216. [See Zool. Rec. xxiv, *Crust.*]
- MARTENS, H. v. Eine neue Gammaride. Note in S.B. nat. Fr. vii, p. 128.
Species not named.
- MEYER, O. Upper Tertiary Invertebrates from the West Side of Chesapeake Bay. P. Ac. Philad. 1888, p. 170.
- *NASONOV, N. V. K'estorie razvitiya Rakovbraznyex *Balanus* e *Artemia* [Development]. Trudni Lab. Zool. Mus. Mosk. lii, pt. 1, 14 pp.
- NORDQUIST, O. (1) Ueber *Moina bathycola* (Vernet) und die grössten Tiefen, in welchen Cladoceren gefunden worden. Zool. Anz. No. 279, pp. 264 & 265.
- . (2) Die Calaniden Finnlands. Helsingfors: 1888, 8vo, 86 pp., 10 pls.; also Bidr. Finl. Nat. xlvii (1887), pp. 191-275.
12 species; 2 new species.
- . (3) Beitrag zur Kenntniss der inneren männlichen Geschlechtsorgane der Cypriden. Act. Soc. Fenn. xv, pp. 129-169, 6 pls.
- NUSSBAUM, M. Abstract of his paper on the First Changes in the Fecundated Ovum of *Lepas*. Ann. N. H. (6) i (Feb.), pp. 160-162; and J. R. Micr. Soc. 1888, ii, p. 218.
- OSBORN, H. L. Elementary histological Studies of the Crayfish. VIII. Am. Micr. J. ix, No. 2, pp. 21-25, No. 4, pp. 65-68, 1 pl. [See Zool. Rec. xxiv, *Crust.*]
- OSORIO, B. Liste des Crustacés des possessions Portugaises d'Afrique occidentale dans les collections du Muséum d'Histoire Naturelle de Lisbonne. (Suite.) J. Sci. Lisb. (Jan.) 1888, pp. 186-191. [See Zool. Rec. xxiv, *Crust.*]
- PATTEN, W. The Eyes of Arthropoda. J. Morph. ii (1888), pp. 97-190, 7 pls. [Abstr. in J. R. Micr. Soc. 1888, pp. 938-940.]
- PEREYASLAWZEWA, SOPHIE. Études sur le développement des Amphipodes. 1^{re} partie. Le développement de *Gammarus paeilurus*, Rthk. Bull. Mosc. 1888, No. 2, pp. 183-219, 4 pls. [See J. R. Micr. Soc. 1888, p. 949.]
- PETIT, L. Effets de la lésion des ganglions sus-œsophagiens chez le Crabe (*Carcinus menas*). C.R. cvii, No. 4, p. 276. [Abstr. in J. R. Micr. Soc. 1888, p. 730.]
- PFEFFER, G. Die Krebse von Süd-Georgien nach der Ausbeute der Deutschen Station. 1882-83. JB. Hamb. 4 Jahrg., pp. 41-150, 7 pls.
13 species; 10 new species.
- PLATEAU, F. (1) Recherches expérimentales sur la vision chez les Arthropodes. Brussels: 1888, 8vo. (From Mém. Cour. 8vo, 1888.)
- . (2) Palpiform organs in Crustacea. Bull. Soc. Z. Fr. xii (1888), pp. 537-552, 11 figs. [Abstr. in J. R. Micr. Soc. (1888), p. 413.]

- POPPE, S. A. Diagnoses de deux espèces nouvelles du genre *Diaptomus*, Westwood. Bull. Soc. Z. Fr. xiii, No. 6, p. 159.
- POUCHET, G. Sur la Nature du Test des Arthropodes. C.R. Soc. Biol. v, pp. 685-688.
- , & WERTHEIMER, L. Sur les Glandes cutanées chez l'Ecrevisse. T. c. pp. 169 & 170.
- PÜCHNER, F. Der Krebs und seine Zucht. (14 illustrations.) Wien (Gerold's sohn in Comm.): 1888, 8vo.
- RATHBUN, R. Descriptions of [four] new species of parasitic Copepods belonging to the genera *Trebino*, *Perissopus*, and *Lernanthropus*. P. U. S. Nat. Mus. x, pp. 559-571.
- RICHARD, J. (1) Note sur *Moina bathycola*. Zool. Anz. 11 Jahrg., No. 273, pp. 118 & 119.
- (2) Cladocères et Copépodes non marins de la faune de France. Rev. Sci. Bourb. i, No. 3, pp. 57-70, No. 4, pp. 78-91.
- (3) Abstract of his paper on Pelagic Fauna of Lakes in Auvergne. Ann. N. H. (1888) v, p. 63. [See Zool. Rec. xxiv, Crust.]
- (4) De la Récolte et de la Conservation des Entomostracés d'eau douce. Feuille. Nat. xvii.
- RIGGIO, G. Appunti di Carcinologia Siciliana. Sul *Polychaetes dodereleini*. Nat. Sicil. iv, No. 5, pp. 99-104, No. 6, pp. 140-146, 1 pl.
- RISTORI, G. Alcuni Crustacei del Miocene medio italiano. Atti (Mem.) Soc. Tosc. ix, pp. 212-219.
- ROBERTSON, D. A Contribution towards a Catalogue of the *Amphipoda* and *Isopoda* of the Firth of Clyde. P. N. H. Soc. Glasg. ii (n.s.) pt. 1, pp. 9-100.
- 107 species of *Amphipoda*, 43 species of *Isopoda*; none new.
- ROSENSTADT, B. Beiträge zur Kenntniss der Organisation von *Asellus aquaticus* und verwandten Isopoden. Biol. Centralbl. No. 15, p. 452. [Abstr. in J. R. Micr. Soc. 1888, p. 948.]
- ROSOLL, A. Ueber zwei neue an Echinodermen lebende parasitische Copepoden. SB. Ak. Wien, xcvi, pp. 181-202, 2 pls. Sep., Wien (F. Tempsky): 1888, 8vo.
- ROSSETER, J. B. On the Male Generative Organs of Two Species of *Cypris* (*C. cineria* and *C. minuta*). J. Micr. & Nat. Sci. i (n. s.) 1888, pp. 231-239, 2 pls.
- ROSSIJSKAJA, M. A. (1) K'estorie razvitiem *Orchestia littorea*, Mont. [Development of *O. littorea*.] Trudui St. Petersburg Nat. Zool. xix, Prot. pp. 58-60.
- (2) K'embryologie *Amphipoda*. Loc. cit. pp. 108-111.
- (3) Études sur le Développement des Amphipodes. Part II. Le Développement d'*Orchestia littorea*. Bull. Mosc. 1888, pp. 561-579, pls. xvi & xvii.

- °SARS, G. O. (1) Additional Notes on Australian *Cladocera*, raised from Dried Mud. Christiana (J. Dybwad): 1888, 8vo, 74 pp., 6 pls. [From Christ. Vid. Selsk. Forhdlgr. 1888.]
11 species; 5 new species.
- (2) Abstract of his Paper on 'Challenger' *Phyllocarida*, in J. R. Micr. Soc. (1888) i, p. 36.
- °SCHIMKEWITSCH, W. M. (1) O *Pantopoda*, &c. [*Pantopoda* collected by Prof. Chierchia during the Voyage of the 'Vettor Pisani']. Trudui St. Petersburg Nat. Zool. xix, Prot. pp. 94-96.
- °— (2) Nyckotoryex nabludeniya rad razvetiem *Astacus leptodactylus*. [Development of *A. leptodactylus*.] Trudui Lab. Zool. Mus. Mosk. 1886, pp. 176-180.
- SCHMIDT, E. Die neue Gammaride. SB. nat. Fr. ix, p. 179.
Same species alluded to by Martens (*Goplana ambulans*).
- SCHMIDT, F. B. Ob otkruiui ostatkov v' *Olenellus* Cambriiskich otlozheniach Estlandii. [Remains of *Olenellus* found in the Cambrian Strata of Gottland.] Trudui St. Petersburg Lab. ix, Geol. Prot. pp. v & vi.
- SCHWARZ, C. G. Ueber die sogenannte "Schleimdrüse" der männlichen *Cypriden*. Ber. Freiburg Ges. iii, pp. 133-138, 2 pls. Sep., Freiburg (J. C. H. Mohr.): 1888, 8vo, 26 pp. [Abstr. in J. R. Micr. Soc. 1888, p. 131.]
- SEGUENZA, G. Gli Ostracodi del porto di Messina. (Suite.) Nat. Sicil. ii, No. 12, p. 284, iii, No. 2, p. 39, No. 3, p. 75, No. 4, p. 124, No. 5, p. 149, No. 6, p. 187, No. 9, pp. 253 & 262, No. 11, p. 319, iv, No. 2, p. 44, No. 4, p. 76, No. 5, p. 110, v, No. 3, p. 57.
- SEMENOVSKY, A. W. K' sestematek i morphologie ryekotornich pryenovodruich Gammarid. [On the systematic position and morphology of a freshwater Gammarid.] Trudui St. Petersburg Lab. 11 Bd., 1 Hft., Prot. pp. 43-51.
- LE SÉNÉCHAL, R. Sur quelques pinces monstrueuses de Décapodes brachyures. Bull. Soc. Z. Fr. xiii, No. 5, pp. 123-125, figs.
- °SMITH, SIDNEY J. Report on the Decapod *Crustacea* of the 'Albatros' Dredgings off the E. Coast of the United States, during the Summer and Autumn of 1884. U. S. Fish. Comm. Rep. for 1885, p. 605, 20 pls.
3 new species.
- ŠOŠTERIĆ, D. Prilog poznavanju faune Slatkovodnih korepnjaka Hrvatske. Rad. jugoslav. akad. xcii, ix, pp. 103-214.
- SOWINSKI, W. Oчерк фауны пресноводных ракообразных из окрестностей г. Киев, &c. [Sketch of the Fauna of the Freshwater *Crustacea* near Kiev, &c.] Zapiski Kiev. ix, pp. 225-298, 1 pl.
- STAMATI, GR. (1) Description d'un appareil permettant la conservation des écrevisses en expérience. Bull. Soc. Z. Fr. xiii, No. 6, p. 151.
- (2) Recherches sur le suc gastrique de l'Écrevisse. C.R. Soc. Biol. v, pp. 16 & 17.

- [STAMATI, GR.] (3) Recherches sur la digestion chez l'Ecrevisse. Bull. Soc. Z. Fr. xiii, No. 6, pp. 146-151, figs.
- . (4) Parasitic Castration of the Crayfish. *T. c.* p. 188. [See J. R. Micr. Soc. 1888, p. 947.]
- STEBBING, TH. R. R. Report on the *Amphipoda* collected by H.M.S. 'Challenger' during the years 1873-1876. Rep. Zool. Chall. Exp. vol. xxix, 1st & 2nd pts. & pls.
- THOMPSON, J. C. (1) A New Parasitic Copepod. *Sci. Goss.* (Feb.) 1888, p. 32, 4 figs.
- . (2) *Copepoda* of Madeira and the Canary Islands, with descriptions of [3] new genera and [6] species. *J. L. S.* xx, p. 145, 4 pls.
- VIGNAL, W. Sur l'Endothélium de la Paroi interne des Vaisseaux des Invertébrés. (The Crab.) *Trav. Lab. Histol.* 1886-7, pp. 1-6, 2 figs.
- VINCENT, G. Note sur deux Crustacés brachyures nouveaux pour la faune du pays. P.-v. Soc. Mal. Belg. 1888, pp. v & vi.
- WALTER, A. (1) Transkaspische Binnencrustaceen. *Zool. Jahrb.* iii, pp. 988-1014, 1 pl.
- I. *Entomostraca* :—A, *Phyllopoda* ; B, *Cladocera* ; C, *Copepoda*.
- . (2) Abstract of his paper on two new Trans-Caspian Branchiopod *Crustacea*. *Ann. N. H.* (6) i, p. 164. [See *Zool. Rec.* xxiv, *Crust.*]
- WEISMANN, A., & ISCHIKAWA, C. Ueber die Befruchtungserscheinungen bei den Dauereiern von Daphniden. *Biol. Centralbl.* viii, No. 14, p. 430.
- ZACHARIAS, O. Zur Fauna einiger norddeutscher Seen. *Biol. Centralbl.* viii, No. 17, p. 540.
- ZIETZ, A. Descriptions of [2] New Species of South Australian Crustaceans. *Tr. R. Soc. S. Austr.* 1887, pp. 298 & 299, 1 pl.

II.—SYSTEMATIC.

The general classification of article *Crustacea* in the *Encyclopædia Britannica* has been followed.

Subclass 1. THORACIPODA = MALACOSTRACA.

General.

Catalogue of *Malacostraca* from the Bay of Concarneau ; BONNIER (2, 3).

Marine *Malacostraca* of W. Greenland ; HANSEN.

Legion 1. *PODOPHTHALMIA*.

Order 1. DECAPODA.

General.

'Albatross' *Decapoda*; SMITH, J. S.
Nervous system of *Decapoda*; BOUVIER (6).

Sub-order (a). *BRACHYURA*.

MARCHAL.

LE SÉNÉCHAL: Abnormalities in *Brachyura*.

VINCENT.

RIGGIO.

Blood-system of the Crab; BOUVIER (3, 4).

KINGSLEY (1).

PÜCHNER.

Effects of ganglionic lesion in the Crab; PETIT.

Cutaneous glands of Crab; POUCHET.

See STAMATI for digestion and nature of the gastric fluid in the Crab.

Circulatory system of *Portunus puber*; BOUVIER (1).

An abnormality in *Platycarcinus pagurus*; FISCHER.

HILGENDORF.

Actumnus elegans, n. sp., DE MAN, (2) p. 47.

Heteropanope indica, n. sp., *id.* p. 53, pl. iii, figs. 1 & 2.

Pilumnus andersoni, n. sp., *id.* p. 59, pl. iii, figs. 5 & 6.

Neptunus andersoni, n. sp., *id.* p. 70, pl. iv, figs. 3 & 4.

Goniosoma merguense, n. sp., *id.* p. 82, pl. v, figs. 3 & 4.

Telphusa callianira and *T. carinifera*, n. spp., *id.* pp. 96 & 100, pl. vi.

Pinnotheres edwardsi, n. sp., *id.* p. 103, pl. vi, figs. 6-9.

Xanthasia sp., *id.* p. 106, pl. vii, fig. 1.

Macrophthalmus erato, n. sp., *id.* p. 125, pl. viii, figs. 12-14.

Dotilla brevitarsis and *D. intermedia*, *id.* pp. 130 & 135, pl. ix.

Dioxippe orientalis, n. g. & sp., *id.* p. 138, pl. ix, figs. 8-10.

Pyridognathus deianira, n. sp., *id.* p. 148, pl. x, figs. 4-6.

Metaplex elegans and *M. intermedius*, n. spp., *id.* pp. 164 & 166, pl. xi.

Sesarma melissa, *S. andersoni*, *S. haswelli*, *S. edwardsi*, *S. polita*, and *S. krausi*, n. spp., *id.* pp. 170-195, pls. xii-xiv.

Clistocaeloma merguensis, n. sp., *id.* p. 195, pl. xiii, fig. 10.

Pseudophilyra melita, n. sp., *id.* p. 199.

Sub-order (b). *ANOMURA*.

DROMIDIA.

Dromia ciliata, n. sp., HENDERSON, p. 3, pl. i, fig. 1.

Cryptodromia japonica, n. sp., *id.* p. 6, pl. i, fig. 2: also *C. nodulifera* and *C. incisa*.

Eutromia frontalis, n. g. & sp., *id.* p. 14, pl. i, fig. 7.

- Homola orientalis*, n. sp., *id.* p. 19, pl. ii, fig. 1.
Latreillopsis bispinosa, n. g. & sp., *id.* p. 22, pl. ii, fig. 3.
Latreillia australiensis, n. sp., *id.* p. 24, pl. ii, fig. 4.
Dromidia cranioides, n. sp., DE MAN, (2) p. 208, pl. xiv, figs. 6-8.

RANINIDEA.

- Notopoides latus*, n. g. & sp., HENDERSON, p. 29, pl. iii, fig. 1.
Notopus ovalis, n. sp., *id.* p. 31, pl. ii, fig. 6.
Zanclifer caribensis, n. g. & sp., *id.* p. 34, pl. iii, fig. 2.

PAGURIDEA.

- Littoides murrayi*, n. sp., HENDERSON, p. 43, pl. iv.
Paralomis aculeatus and *P. formosus*, n. spp., *id.* p. 45, pl. v.
Diogenes guttatus, n. sp., *id.* p. 54, pl. vi, fig. 4.
Pagurus de-armatus and *P. similimanus*, n. spp., *id.* p. 58, pls. v & vi.
Eupagurus lacertosus, *E. tristanensis*, *E. spinulentus*, *E. rubricatus*,
E. ocellus, n. spp., *id.* pp. 63-70, pls. vi & vii.
Anapagurus pusillus, n. sp., *id.* p. 73, pl. vii, fig. 7.
Anapagurus australiensis, *id.* p. 74, pl. vii, fig. 8.
Catapagurus australis, n. sp., *id.* p. 76, pl. viii, fig. 1.
Paguristes subpilosus, *P. visor*, *P. hians*, n. spp., *id.* pp. 77-79, pl. viii,
 figs. 2-4.
Glaucottae carinata, n. sp., *id.* p. 84, pl. ix, fig. 1.
Parapagurus affinis, *P. latimanus*, *P. gracilis*, n. spp., *id.* pp. 90-92,
 pls. ix & x.
Paguroides, n. g., *id.* p. 94, with n. spp., *inarmatus*, pl. x, fig. 5, *piliferus*,
 pl. ix, fig. 5, and *limatulus*, pl. x, fig. 6.
Paguroopsis typicus, n. g. & sp., *id.* p. 99, pl. x, fig. 4.
Pylocteles spinosus, n. sp., *id.* p. 101, pl. xi, fig. 1.
Diogenes merguensis, n. sp., DE MAN, (2) p. 228, pl. xv, figs. 4-6.
Clibanarius padavensis and *C. arethusu*, n. spp., *id.* pp. 242-252, pl. xvi.

GALATHEIDEA.

- Petrolisthes unilobatus*, n. sp., HENDERSON, p. 106, pl. xi, fig. 3; *P.*
serratus, pl. xi, fig. 2.
Porcellana euphrosyne, n. sp., DE MAN, (2) p. 221, pl. xv, figs. 1-3.
Porcellana robertsoni, n. sp., HENDERSON, p. 111, pl. x, fig. 6.
Munida incerta, n. sp., *id.* p. 130, pl. xiii, fig. 4.
Uroptychus: new name for *Diptychus*, M.-Ed.
 French species of *Galathea*; BONNIER (1).

Sub-order (c). MACRURA.

- Claspers in female Crayfish; BERGENDAL.
 Vascular system in certain *Macrura*; BOUVIER (2).
 Castration effected by parasites; GIARD.
 Interoxal lobes of Crayfishes; MACKAY.
 Histology of Crayfish; OSBORN.

- Cheiroplatea cenobita*, n. g. & sp., BATE, p. 12, pl. i.
Callinassa occidentalis, n. sp., *id.* p. 29.
Cheramus, n. g., with n. spp. *orientalis* and *occidentalis*; *id.* pp. 30 & 32, pl. ii, figs. 1 & 2.
Scallasis amboinae, n. g. & sp., *id.* p. 34, pl. ii, fig. 3.
Paraxius altus, n. g. & sp., *id.* p. 37, pl. v, fig. 1.
Eiconaxius, n. g., with n. spp. *acutifrons*, *kermadeci*, and *parvus*; *id.* pp. 40, 43, & 44, pl. v, figs. 2-5.
Ibbacus verdi, n. sp., *id.*: also *I. brevipes* and *I. alticrenatus*, pp. 58, 62, & 63, pls. vii, fig. 2, viii & ix, figs. 1 & 2.
Arctus orientalis, *A. tuberculatus*, *A. immaturus*, *A. pygmaeus*, n. spp., *id.* pp. 68, 70, 71, & 73, pls. ix, figs. 3, 4, & x.
Panulirus angulatus, n. sp., *id.* p. 81.
Pentacheles gracilis, n. sp., *id.* p. 146, pl. xvi, figs. 1 & 2.
Nephropsis suhmi, n. sp., *id.* p. 181, pls. xxiii, fig. 3, & xxiv, fig. 2.
Nephrops thomsoni, n. sp., *id.* p. 185, pls. xxv & xxvi.
Astacopsis paramattensis and *A. sydneyensis*, n. spp., *id.* pp. 202 & 204, pl. xxvii.
Peneus incisipes, *P. anchoralis*, *P. philippensis*, *P. rectacutus*, *P. tenellus*, n. spp., *id.* pp. 257, 258, 261, 266, & 270, pls. xxxi-xxxvi.
Philonicus, n. g., with n. spp. *mülleri* and *pectinatus*; *id.* pp. 275 & 279, pls. xxxviii & xxxix.
Artemesia longinaris, n. g. & sp., *id.* p. 281, pl. xl.
Haliporus equalis, n. sp., *id.* p. 285, pl. xli, fig. 1.
Sicyonia laevis, n. sp., *id.* p. 298, pl. xliii, fig. 5.
Peteinura gubernata, n. g. & sp., *id.* p. 324, pl. liii.
Gennadas intermedius, n. sp., *id.* p. 343, pl. lviii, fig. 3.
Platysacus crenatus, n. g. & sp., *id.* p. 363, pl. lxiii.
Mastigopus suhmi, n. sp., *id.* p. 378, pl. lxvi, fig. 2: also *M. spiniventralis*, p. 379, pl. lxvii, fig. 4.
Sergees intermedius, *S. dorsispiralis*, *S. laterodentatus*, *S. ovatoculus*, *S. parvidens*, *S. longirostris*, *S. junceus*, *S. longispinus*, *S. penerinkii*, *S. fermerinkii*, *S. longicollus*, *S. semiarmis*, *S. leviventralis*, *S. spiniventralis*, *S. profundus*, *S. ventridentatus*, *S. utringuedens*, *S. dissimilis*, n. spp., *id.* pp. 385, *et. seq.*, pls. lxxii-lxxvii.
Sciacarid telsonis, n. g. & sp., *id.* p. 438, pl. lxxviii.
Zoontocaris galathea, n. g. & sp., *id.* p. 474, pl. lxxxv, fig. 3.
Sestertius duplicentes, n. g. & sp., *id.* p. 477, pl. lxxxv, fig. 5.
Pontophilus gracilis, *P. profundus*, *P. junceus*, n. spp., *id.* pp. 490 & 491, pls. lxxxvii & lxxxviii.
Pontocaris, n. g., with n. spp. *propensulata* and *pennata*; *id.* pp. 496 & 499, pls. xc, figs. 2 & 3, & xci.
Glyphocrangon granulosus, *G. podager*, *G. regalis*, *G. hasticauda*, *G. acuminata*, *G. rimapes*, n. spp., *id.* pp. 507, 516, 517, 519, 522, & 523, pls. xcii-xciv.
Nika processa, n. sp., *id.* p. 527, pl. xcv.
Athanas veloculus, n. sp., *id.* p. 529, pl. xcvi, fig. 1.
Parathanax, n. g., with n. spp. *decorticus* and *immaturus*; *id.* pp. 530 & 532.
Cheirothrix parvimanus, n. g. & sp., *id.* p. 533, pl. xcvi, fig. 2.

Alpheus bermudensis, *A. longimanus*, *A. prolificus*, *A. intrinsecus*, n. spp., *id.* pp. 547, 551, 556, & 557, pls. xcviii-c.

Betesus malleodigitus and *B. microstylus*, n. spp., *id.* pp. 565 & 566, pl. ci, figs. 5 & 6.

Paralpheus, n. g., erected from *Alpheus diversimanus*, M. Edw.; *id.* p. 568, pl. cii.

Synalpheus fulcatus, n. g. & sp., *id.* p. 574, pl. ciii.

Platebema rugosum, n. g. & sp., *id.* p. 579, pl. civ, fig. 2.

Latreutes planus and *L. unidentatus*, n. spp., *id.* pp. 584 & 586.

Hippolyte bidentatus and *H. projecta*, n. spp., *id.* pp. 591 & 594, pl. cv.

Spirontocaris spinus = *Hippolyte spinus*, Owen; *id.* p. 596, pls. cvi & cvii.

Nauticaris, n. g., with n. spp. *marionis*, *futilirostris* and *unirecedens*; *id.* pp. 603, 606, & 608, pls. cviii, cix, fig. 1, & cx, fig. 1.

Hetairus, n. g., including *H. gaimardii* (= *Hippolyte gaimardii*, M. Ed.) and two n. spp., *tenuis* and *debilis*; *id.* pp. 611, 613, & 615, pl. cix, figs. 2-4.

Chorismus tuberculatus, n. g. & sp., *id.* p. 617, pl. cx, fig. 2.

Merhippolyte agulhasensis and *M. orientalis*, n. g. & spp., *id.* pp. 619 & 621, pl. cx, fig. 4.

Amphiplectus depressus, n. g. & sp., *id.* p. 623, pl. cx, fig. 3.

Heterocarpus dorsalis, *H. alphonsi*, *H. gibbosus*, and *H. laevigatus*, n. spp., *id.* pp. 630 & 632, pls. cxi & cxii, figs. 1-4.

Plesionika, n. g., with n. spp. *uniproduca*, *senilævis*, and *unidens*; *id.* pp. 641, 644, & 648, pl. cxiii, figs. 1-4.

Nothocaris rostricrescentis, *N. spiniserratus*, *N. ocellus*, and *N. binoculus*, n. g. & spp., *id.* pp. 653, 656, 657, & 663, pl. cxiv, figs. 1-3.

Pandalus magnoculus, *P. falcipes*, and *P. modestus*, n. spp., *id.* pp. 667, 668, & 670, pls. cxiv, fig. 4, & cxv, figs. 1 & 2.

Dorodotes, n. g., with n. spp. *reflexus* and *laevicarina*; *id.* pp. 678 & 680, pls. cxii, fig. 5, & cxvi, fig. 3.

Thalassocaris danæ and *T. stimpsoni*, n. spp., *id.* pp. 683 & 684, pl. cxvii, figs. 1 & 2.

Diaphoropus, n. g., with n. spp. *versipellis* and *longidorsalis*; *id.* pp. 687 & 688, pl. cxvii, figs. 3 & 4.

Kyptocaris stylofrontalis, n. g. & sp., *id.* p. 690, pl. cxxi, fig. 1.

Atya serrata, n. sp., *id.* p. 699, pl. cxix, fig. 2 (fresh-water).

Curicyphus, n. g., with n. spp. *cornutus*, *serramarginis*, *gibberosus*, *turgidus*, and *angulatus*; *id.* pp. 712, 714, & 716-718, pl. cxxi, figs. 2-6.

Rhomaleocaris hamulus, n. g. & sp., *id.* p. 720, pl. cxxiii, fig. 2.

Aneboecaris quadroculeus, n. g. & sp., *id.* p. 722, pl. cxxiii, fig. 1.

Bentheocaris, n. g., with n. spp. *exuens* and *stylorostratis*; *id.* pp. 724 & 726, pl. cxxiii, figs. 3 & 4.

Acanthephyra longidens, *A. medea*, *A. augusta*, *A. sica*, *A. acanthitelsonis*, *A. edwardsii*, *A. carinata*, *A. acutifrons*, *A. kingsleyi*, *A. brevirostris*, *A. brachyitelsonis*, and *A. approximata*, n. spp., *id.* pp. 730-755, pls. cxxiv, figs. 3-6, cxxv & cxxvi.

Systellaspis lanceocaudata, n. g. & sp., *id.* p. 758, pl. cxxiv, fig. 7.

Oplophorus longirostris and *O. brevirostris*, n. spp., *id.* pp. 765 & 766, pls. cxxii, fig. 3, & cxxvii, figs. 2 & 3.

Campylonotus, n. g., with n. spp. *semistriatus*, *cupensis*, and *vugans*; *id.* pp. 768, 773, & 775, pl. cxxviii, figs. 1-3.

Brachycarpus, n. g., with n. spp. *savignyi* and *audonini*; *id.* pp. 795 & 798, pl. cxxix, figs. 4 & 5.

Nematocarcinus undulatus, *N. lanceopes*, *N. longirostris*, *N. proximus*, *N. altus*, *N. productus*, *N. tenuipes*, *N. parvidentatus*, *N. paucidentatus*, *N. tenuirostris*, *N. serratus*, *N. hiatus*, *N. intermedius*, n. spp., *id.* pp. 800-819, pls. cxxx-cxxxii.

Stochasmus exilis, n. g. & sp., *id.* p. 823, pl. cxxxii, fig. 14.

Notostomus patentissimus, *N. murrayi*, *N. brevirostris*, *N. longirostris*, n. spp., *id.* pp. 826, 829, 832, & 833, pls. cxxxiii-cxxxv.

Tropiocaris, n. g., with n. spp. *planipes* and *tenuipes*; *id.* pp. 834 & 835, pl. cxxxvi, figs. 1 & 2.

Hymenodora duplex, *H. rostrata*, *H. glauca*, *H. mollicutis*, n. spp., *id.* pp. 843 & 846-848, pls. cxxxvi, figs. 3-5, & cxxxvii.

Stylodactylus discissipes, *S. orientalis*, and *S. bimaxillaris*, n. spp., *id.* pp. 851, 854, & 855, pl. cxxxviii.

Leptochela serratorbita, n. sp., *id.* p. 859, pl. cxxxix, fig. 1.

Pasiphca cristata, *P. amplidens*, *P. acutifrons*, n. spp., *id.* pp. 865, 870, & 871, pls. cxl & cxli, figs. 1-3.

Orphanica tenuimana, n. g. & sp., *id.* p. 872, pl. cxli, fig. 4.

Oodeopus, n. g., with n. spp. *geminidentatus*, *serratus*, *duplex*, and *longispinus*; *id.* pp. 876, 877, 880, & 881, pls. cxlii & cxliii.

Proclites biangulatus, n. g. & sp., *id.* p. 884, pl. cxlvii, fig. 4.

Ictopus arcuostriis, n. g. & sp., *id.* p. 886, pl. cxliv, fig. 1.

Hectarthropus, n. g., with n. spp. *exilis*, *compressus*, *expansus*, *tenuis*, *id.* pp. 889 & 891-893, pl. cxliv, figs. 2-6.

Eretnocaris remipes, n. g., with n. spp. *longicaulis*, *stylorostriis*, *corniger*; *id.* pp. 895, 897, 898, & 900, pl. cxlv.

Amphion provocatoris, n. sp., *id.* p. 913, pl. cxlviii.

Habita, &c., of *Alpheus*; HERRICK.

Alpheus præcox, n. sp., *id.*

Alpheus hippothoe, n. sp., DE MAN, (2) p. 268, pl. xvii, figs. 1-5.

Atya wykii, n. sp., HICKSON. A small species inhabiting Lake Tondano, 2000 feet above the sea level, in Celebes.

Development of *Crangon*; KINGSLEY (2).

Gryllopagurus, n. g., with two n. spp. from S. Australia; ZIEtz.

Gebiopsis intermedia, n. sp., DE MAN, (2) p. 256, pl. xvi, fig. 2.

Harpilius miersi, n. sp., *id.* p. 274, pl. xvii, figs. 6-10.

Hippolyte oligodon, n. sp., *id.* p. 277, pl. xviii, figs. 1-6.

Penæus merguensis and *P. lysianana*, n. spp., *id.* pp. 287-290, pls. xviii & xix.

Pseudosquilla pikeensis (Stomatopod), n. sp., DE MAN, (2) p. 296.

Legion 2. EDRIOPHTHALMIA.

Order 3. ISOPODA.

DOLLFUS (1, 2, 3).

Philoscia corsica, n. sp., DOLLFUS (1).

ROBERTSON gives 41 species of *Isopoda* of the Firth of Clyde; none

Structure of *Asellus aquaticus*; ROSENSTADT.

Structure of the eye in *Cymothoidæ*; BEDDARD.

GIARD & BONNIER (3), on *Bopyridæ*.

CLAUS, on the *Tanaidæ*.

Probopyrus ascendens, n. g. & sp., GIARD & BONNIER, (2) p. 303.

Palegyge borrei, n. sp., *id.* p. 304.

GIARD & BONNIER (1) give the following new *Cæponidæ*:—*Grapsicephon* parasitic on *Nautilograpsus*; *G. amicorum* on *Trapezia dentifrons*; *Portunicepon hendersoni* (Madras), on *Thalamita callianassa*; *Pleurocrypta formosa* on *Ptychogaster formosus*.

Order 4. TRILOBITA.

(See under *Arachnida*.)

Order 5. AMPHIPODA.

Development: ROSSIJSKAJA (2).

Sexual dimorphism in the genus *Moira*; BARROIS (1).

Amphipoda collected near Cherchell; CHEVREUX (1).

Geographical distribution of *Amphipoda*; *id.* (4).

Adaptation to land life; DE GUERNE (1).

ROBERTSON gives 107 species of *Amphipoda* of the Firth of Clyde: none new.

For a very full account of the literature of *Amphipoda*, with special regard to rare papers and works difficult of access, see STEBBING, pp. 1-600, and Appendix, pp. 1617-1656.

A short list of works useful to the student of *Amphipoda* will also be found on p. xii.

HYPERIDÆ.

Contributions to a monograph; BOVALLIUS.

Phronimopsis tenella, n. sp., STEBBING, p. 1374, pl. clxiv.

Hyperia sibaginis, *H. luzoni*, *H. promontorii*, *H. dyaschistus*, *H. schizogeneios*, and *H. cryptodactylus*, n. spp., *id.* p. 1397, pls. clxv-clxx.

Hyperrella dilatata, n. sp., *id.* p. 1403, pl. clxxi.

ORCHESTIDÆ.

Orchestia incisimana, n. sp., CHEVREUX, (1) p. 347, pl. vi.

Orchestia chevreuxi, DE GUERNE (1).

Orchestia selkirkii, n. sp., STEBBING, p. 603, pls. i & ii.

Development of *Orchestia littorea*; ROSSIJSKAJA (1).

AMPELISCIDÆ.

DELLA VALLE.

Ampelisca serraticaudata, n. sp., CHEVREUX, (1) p. 349, pl. vi.

Ampelisca acinaces, *A. chiltoni*, *A. abyssicola*, *A. fusca*, *A. zamboangæ*, n. spp., STEBBING, p. 1036, pls. ci-cvi.

1888. [VOL. XXV.]

D 13

TRYPHANIDÆ.

- Tryphana bæcki*, n. sp., STEBBING, p. 1539, pl. xciv.
Brachyscelus bovallii, *B. latipes*, *B. acuticaudatus*, n. spp., *id.* p. 1553,
 pls. xcvi A, B, C.
Thamneus platyrrhyncus, n. sp., *id.* p. 1558, pl. xcvi.
Lycæa vincentii, n. sp., *id.* p. 1563, pl. xcix.

GAMMARIDÆ.

A new Gammarid; MARTENS.

Gammarus pœcilurus, development; PEREYASLAWZEWA.

Maera bruzelii, n. sp., STEBBING, p. 1014, pl. xcvi.

Elasmopus delaplata, n. sp., *id.* p. 1025, pl. xcix.

Goplana ambulans, n. sp., taken near Berlin, SCHMIDT, E., p. 180.
 stematic position, &c., of a Gammarid; SEMENOVSKY.

PHOTIDÆ.

Photis macrocarpus and *P. brevicaudata*, n. spp., STEBBING, p. 1064,
 pls. cvii & cviii.

Aora kergueleni and *A. trichobostrychus*, n. spp., *id.* p. 1073, pl. cix.

Autonoë philacantha and *A. kergueleni*, n. spp., *id.* p. 1082, pls. cx & cxl.

Gammaropsis exsertipes, *G. afra*, *G. atlantica*, *G. thomsoni*, n. spp., *id.*
 p. 1093, pls. cxii-cxv.

Podoceros kermadeci, n. sp., *id.* p. 1109, pl. cxvi.

PHERONOIDÆ.

Euphronoë inscripta and *E. intermedia*, n. spp., STEBBING, p. 1510,
 pls. clxxxvii & clxxxviii.

Paraphronoë campbelli, *P. clausi*, and *P. clausoides*, n. spp., *id.* p. 1522,
 pls. clxxxix-cxci.

Symphronoe propinqua, n. g. & sp., *id.* p. 1533, pl. cxci B.

STENOTHOIDÆ.

Stenothoë adhærens, n. sp., STEBBING, p. 748, pl. xxxix.

Metopa sarsii, PFEFFER, p. 84, pls. ii & iii.

Metopa nasutigenes, *M. magellanica*, *M. crenatipalmata*, *M. parallelocheir*,
M. ovata, *M. compacta*, n. spp., STEBBING, p. 753, pls. xl-xlv.

PONTOPOREIIDÆ.

Cardenis paurodactylus, n. g. & sp., STEBBING, p. 806, pl. liii.

Phrozocephalus bassi and *P. kergueleni*, n. spp., *id.* p. 811, pls. liv & lv.

Harpinia obtusifrons, n. sp., *id.* p. 820, pl. lvi.

Urothoë lachneissa, n. sp., *id.* p. 825, pl. lvii.

Platyischnopus mirabilis, n. g. & sp., *id.* p. 830, pl. lviii.

PODOCERIDÆ.

Amphithoe kergueleni and *A. flindersi*, n. spp., STEBBING, p. 1116, and pls. cxvii & cxviii.

Podocerus hæki and *P. tristanensis*, n. spp., *id.* p. 1136, pls. cxx & cxxi.

Podocerus nicens, n. sp., PFEFFER, p. 131, pl. iii, fig. 1.

Dryapoides westwoodii, n. g. & sp., STEBBING, p. 1146, pl. cxxii.

Paradryope orguon, n. g. & sp., *id.* p. 1151, pl. cxxiii.

LYSIANASSIDÆ.

Anomys zschanii, n. sp., PFEFFER, p. 87, pl. ii, fig. 1.

Anomys femoratus, n. sp., *id.* p. 93, pl. ii, fig. 2.

Anomys cicadoides, n. sp., STEBBING, p. 612, pls. iv & v.

Tryphosa antennipotens and *T. barbatipes*, n. spp., *id.* pls. vi & vii.

Hippomedon trgonicus, *H. miersi*, *H. geelongi*, n. spp., *id.* pls. ix-xi.

Cheirimedon crenatipalmatus, n. g. & sp., *id.* p. 638, pl. xii.

Platamon longimanus, n. g. & sp., *id.* p. 643, pl. xiii.

Onesimoides carinatus, n. g. & sp., *id.* p. 648, pl. xiv.

Sophrosyne murrayi, n. g. & sp., *id.* p. 652, pl. xv.

Kerguelenia compacta, n. sp., *id.* pl. xv a.

Cyphocaris micronyx and *C. challenger*, n. spp., *id.* pls. xvi & xvii.

Cyclocaris tahitensis, n. g. & sp., *id.* p. 669, pl. xix.

Orchomene musculosus, *O. abyssorum*, *O. cavimanus*, n. spp., *id.* p. 673, pls. xx-xxii.

Lepidepcreum praminiferum, n. sp., *id.* p. 686, pl. xxiv.

Socarnoides kergueleni, n. g. & sp., *id.* p. 691, pl. xxv.

Ambasia integricauda, n. sp., *id.* p. 695, pl. xxvi.

Amaryllis bathycephalus, *A. haswellii*, n. spp., *id.* pls. xxvii & xxviii.

Acontistoma, n. g., with spp. *marionis*, *magellanicum*, *pepini*, and *kergueleni*; *id.* p. 709, pls. xxx-xxxiii.

ATYLIDÆ.

Bovallia gigantea, n. g. & sp., PFEFFER, p. 96, pl. i, fig. 5.

Eurymera monticulosa, n. g. & sp., *id.* p. 103, pl. i, fig. 3.

Stebbingia gregaria, n. g. & sp., *id.* p. 110, pl. ii, fig. 7.

Atyloides, n. g., with n. spp. *assimilis* and *serraticauda*; STEBBING, p. 913, pls. lxxvii & lxxviii.

Atylopsis, n. g., with n. spp. *magellanicus*, *dentatus*, and *emarginatus*; *id.* p. 924, pls. lxxix-lxxxi.

Harpinoides drepanocheis, n. g. & sp., *id.* p. 937, pl. lxxxii.

Tritaeta kergueleni, n. sp., *id.* p. 941, pl. lxxxiii.

Stenopleura atlantica, n. g. & sp., *id.* p. 949, pl. lxxxiv.

OXYCEPHALIDÆ.

Leptocotis mindanaonis and *L. ambobus*, n. spp., STEBBING, p. 1598, pls. cciv & ccv.

- Calamorrhynchus rigidus*, n. sp., *id.* p. 1600, pl. ccvi.
Streetsia challengerii, n. sp., *id.* p. 1603, pl. ccvii.
Rhabdosoma brevicaudatum, n. sp., *id.* p. 1612, pl. ccviii.

ALIIARUM FAMILIARUM.

- Valettia coheres*, n. g. & sp., STEBBING, p. 724, pl. xxxiv.
Andania boeckii, *A. abyssorum*, n. spp., *id.* p. 735, pls. xxxvi & xxxvii.
Amphilochus marionis, n. sp., *id.* p. 743, pl. xxxviii.
Leucothoe antarctica, n. sp., PFEFFER, p. 128, pl. ii.
Leucothoe miersi, *L. tridens*, *L. flindersi*, n. spp., STEBBING, p. 772, pls. xli-xlviii.
Syrrhoe papyracea and *S. semiserrata*, n. spp., *id.* p. 789, pls. i & li.
Halimedon schneideri, n. sp., *id.* p. 839, pl. lix.
Ediceroides cinderella, n. g. & sp., *id.* p. 850, pls. lxii & lxiii.
Pleustes abyssorum, n. sp., *id.* p. 872, pl. lxvii.
Rhachotropia kergueleni, n. sp., *id.* p. 955, pl. lxxxv.
Cleonardo longipes, n. sp., *id.* p. 959, pl. lxxxvi.
Eusiroides, n. g., with n. spp. *casaris*, *pompeii*, *crassi*; *id.* p. 969, pls. lxxxviii-xc.
Lilljeborgia consanguinea and *L. haswelli*, n. spp., *id.* p. 980, pls. xci & xcii.
Pardaliscia marionis, n. sp., *id.* p. 996, pl. xciv.
Synopioides macronyx, n. g. & sp., *id.* p. 1000, pl. xciv A.
Cerapus sismithi and *C. flindersi*, n. spp., *id.* p. 1158, pls. cxxiv & cxxv.
Platophilum danae, *P. chelonix*, and *P. inconspicuum*, n. spp., *id.* p. 1185, pls. cxxviii-cxxxi.
Laetmatophilus purus, n. sp., *id.* p. 1198, pl. cxxxii.
Icilius danae, n. sp., *id.* p. 1203, pl. cxxxiii.
Chosroës incisus, n. g. & sp., *id.* p. 1209, pl. cxxxiv.
Nehohela serrata, n. sp., *id.* p. 1215, pl. cxxxvi.
Caprellinoides tristanensis, n. g. & sp., *id.* p. 1238, pl. clxi.
Protellopsis kergueleni, n. g. & sp., *id.* p. 1241, pl. clxii.
Aeginella tristanensis, n. sp., *id.* p. 1249, pl. clxiii.
Vibilia propinqua, *V. milnei*, *V. riator*, *V. australis*, *V. antarctica*, n. spp., *id.* p. 1279, pls. clxvii-cl.
Lanceola pacifica and *L. æstiva*, n. spp., *id.* p. 1302, pls. cli-cliii.
Paraphonima, *id.* p. 1337, pl. clvii.
Dairella bovallii, n. sp., *id.* p. 1343, pl. clviii.
Phronima tonella and *P. megalodon*, n. spp., *id.* p. 1353, pl. clxii A.
Primno lutreillei and *P. menevillei*, n. spp., *id.* p. 1445, pls. clxxx A & B.
Phorcorrhaphis zamboanga and *P. edwardsi*, n. spp., *id.* p. 1452, pls. clxxx & clxxxi.
Tetrathyrus monexuri, n. sp., *id.* p. 1480, pl. clxxxiv.
Calliopius georgianus, n. sp., PFEFFER, p. 116, pl. ii, fig. 6.
Megamæra miersii, n. sp., *id.* p. 121, pl. iii, fig. 3.
Caprellina mayeri, n. sp., *id.* p. 137, pl. iii, fig. 4.
Allorchæstes georgianus, n. sp., *id.* p. 77, pl. li.
Paracelcus zebu, n. sp., STEBBING, p. 1496, pl. clxxxv.

- Zaramilla kergueleni*, n. g. & sp., *id.* p. 866, pl. lxvi.
Huplocheira plumosa, n. sp., *id.* p. 1172, pl. cxxvi.
Czmacho bathyplois, n. g. & sp., *id.* p. 1179, pl. cxxvii.
Desamaine flindersi, n. sp., *id.* p. 946, pl. cxxxvii c.
Amphithoe japonica, n. sp., *id.* p. 1124, pl. cxxxviii a.
Cyllopus hookeri, n. sp., *id.* p. 1296, pl. ccix a.
Primno antarctica, n. sp., *id.* p. 1448, pl. ccix b.
Lycæopsis pauli, n. sp., *id.* p. 1459, pl. ccix c.
Paratyphis promontorii, n. sp., *id.* p. 1476, pl. ccix d.
Tetrathyrus arafura, n. sp., *id.* 1483, pl. 1483, pl. ccx a.
Amphithyrus orientalis, n. sp., *id.* 1485, pl. ccx b.
Thyropus danae, n. sp., *id.* p. 1492, pl. ccx c.
Paralycaea hoylei, n. sp., *id.* p. 1570, pl. ccx e.
Cyrtophium chelonophilum, n. sp., CHEVREUX (2).
 STEBBING proposes the following new generic names:—
Caprellinopsis, for *Caprellina*, G. M. Thompson.
Eusceliotes, for *Euscelus*, Claus.
Lysianax, for *Lysianassa*, M.-Edwards.
Panambus, for *Podalirius*, Kroyer.
Phorcorrhapsis, for *Phorcus*, M.-Edwards.
Phozocephalus, for *Phoxus*, Kroyer.
Priscillina, for *Priscilla*, Böeck.
Haustorius, Müller, reinstated for *Lepidactylis*, Say.
Phtisica, Slabber, reinstated for *Proto*, Leach.
Scina, Prestandres, reinstated for *Tyro*, M.-Ed., and *Clydonia*, Dana.
 BARROIS (1) finds that *Moiria integerrima*, Hiller, is the female of *M. scissimana*, Costa, and that *M. donatoi*, Hiller, is the female of *M. grassimana*, Montague.

Sub-class 2. GNATHOPODA = ENTOMOSTRACA.

General.

WALKER (1).
 BRADY.

Legion 3. MEROSTOMATA.

Order 7. EURYPTERIDÆ.

(See *Arachnida*, p. 28.)

Legion 4. BRANCHIOPODA.

General.

WALTER (2).

Order 8. PHYLLOPODA.

AMANS, treating of organs of aquatic locomotion, touches on *Apus* and *Langustus*, p. 126.

Order 9. CLADOCERA.

Daphnia pliteicensis, n. sp., SOŠTERIĆ.

Branchipus raddeanus, n. sp., WALTER, p. 997, pl. xxxv, figs. 3 & 4. WEISMANN.

RICHARD (2).

Hungarian *Cladocera*; DADAY.

Australian *Cladocera*; SARRS.

Moina bathycola; NORDQUIST (1) and RICHARD (1).

European *Daphniidæ*; EYLMANN: n. sp. *Daphnia curvirostris*, p. 17, pl. iii, figs. 7 & 8. A tabulated view of the distinctive characteristics of the five genera is given on p. 15, and of the various species on pp. 8 & 9.

Legion 5. LOPHYROPODA.

Order 10. OSTRACODA.

Marine *Ostracoda*; CLAUS (1).

Cytheridæ of the Ost-see; DAHL.

Structure of *Cyprinidæ*; GARBINI.

Male generative organs of *Cypris cineria* and *C. minuta*; ROSSETER.

"Slime-glands" in male *Cypridæ*; SCHWARTZ.

Ostracoda of Messina; SEGUENZA.

Limnocythere incisa, n. sp., DAHL, p. 616, pl. xvii, figs. 49-58.

Kyamodes, n. g. (Palæozoic); T. R. JONES.

Order 11. COPEPODA.

The *Hersiliadæ*—colonial *Copepoda*; CANU (2).

Free *Copepoda*; *id.* (3).

A new Copepod parasite; FEWKES.

See RICHARD (2) for French fresh-water *Copepoda*.

See LEIDY, on parasitic *Copepoda*.

The *Calanidæ* of Finland; NORDQUIST (2). Two n. spp.

Calanus caroli, *C. pauper*, *C. robustior*, n. spp., GIESBRECHT, p. 331.

Paracalanus aculeatus, n. sp., *id.* p. 332.

Acrocalanus, n. g., with spp. *longicornis*, *gracilis*, *gibber*, and *monachus*; *id.* p. 332.

Calocalanus styliremis, n. g. & sp., *id.* p. 333.

Eucalanus crassus, *E. monachus*, *E. subtennis*, *E. mucronatus*, *E. pileatus*, and *E. subcrassus*, n. spp., *id.* p. 333.

Rhincalanus nasutus, n. sp., *id.* p. 334.

Leptocalanus filicornis, n. g. & sp., *id.* p. 334.

Clausocalanus, n. g., for *Eucalano* (Claus); *id.*

Ctenocalanus ranus, n. g. & sp., *id.* p. 335.

Spinocalanus abyssalis, n. g. & sp., *id.* p. 335.

Gaetanus, n. g., with n. spp. *miles* and *armiger*; *id.* p. 335.

Undeucharta, n. g., with n. spp. *major* and *minor*; *id.* p. 336.

Eucharella, n. g., with n. spp. *galeata*, *bella*, *venusta*, *amana*, and *curticauda*; *id.* p. 336.

Euchæta hebes, *E. media*, *E. flava*, *E. longicornis*, *E. grandiremis*, n. spp. *id.* p. 337.

Scolocithrix bradyi, *S. abyssalis*, *S. marginata*, *S. longifurca*, *S. porrecta*, and *S. ctenopus*, n. spp., *id.* p. 338.

Giardella callianassæ, n. g. & sp., CANU (2).

Hersiliodes, n. g., with n. spp. *pelseneeri* and *thomsoni*; *id.*

Popella guernii, n. g. & sp., RICHARD, (2) p. 69.

Ascomyzon comatulæ, n. sp., parasitic on *Antedon comatula*; ROSOLL.

Astericola clausii, n. g. & sp., parasitic on *Asterias*; *id.*

Lichomolpus sabellæ, n. sp., parasitic on gill of *Sabella*, taken at Beaumaris; THOMPSON (1).

Diaptomus: 2 n. spp. from Algeria; DE GUERNE (2).

Geographical distribution of *Diaptomus*; DE GUERNE & RICHARD.

Two new N. European spp. of *Diaptomus*; LILLJEBORG. See also POPPE.

HESSE describes *Cecrops latreillii* and *Lamargus muricatus*, hitherto inadequately described.

THOMPSON (2) gives 64 spp. of *Copepoda* of Madeira and the Canaries, distributed as follows:—*Calanidæ*, 20 spp.; *Cyclopidæ*, 4 spp.; *Harpacticidæ*, 16 spp.; *Corycæidæ*, 11 spp.; *Artotrogidæ*, 3 spp. The following are the new species:—

Candace nigrocincta, n. sp., p. 148, pl. x, figs. 1-6.

Candace brevicornis, n. sp., p. 149, pl. x, figs. 7 & 8.

Mecynocera clausi, n. g. & sp., p. 150, pl. xi, figs. 1-4.

Machairopus sanctæ-crucis, n. g. & sp., p. 152, pl. xii, figs. 1-5.

Acontiophorus angulatus, n. sp., p. 153, pl. xii, figs. 6-11, & pl. xiii, figs. 5 & 6.

Cymbasoma rigidum, n. sp., p. 154, pl. xiii, figs. 1-4.

Temorella affinis n. var. *hirundoides*; NORDQUIST, (2) p. 238, pl. iv, figs. 5-11.

Temorella affinis n. var. *hispida*; *id.* p. 243, pl. v, fig. 1.

Diaptomus zogrufi and *D. boyddanouvii*; KORCHAGEN.

Legion 6. ANCHORACEPHALA.

Order 13. CIRRHIPEDIA.

Structure of the stalk of Cirrhipedes. A preliminary note; KÖHLER.

Lepas fascicularis; LEIDY (2).

Development of *Lepas*; NUSSBAUM.

III.—MORPHOLOGY.

Reproduction.

The effects of parasitic castration in *Macrura* are not uniform, being probably dependent on the period at which the animal is infested.

Neither are they indelible, as, after some moults, *Paguri* freed from parasites re-acquire male characteristics. GIARD (1, 2).

Deep-sea Galatheids produce eggs, few in number and remarkably large. This probably indicates that deep-sea enemies are fewer. *Id. ibid.*

Alpheus præcox acquires adult characteristics twenty-four hours after hatching. *A. heterochelis* is the only other known species which presents abbreviated metamorphosis. The habits and colour-variation of *Alpheus* are also treated of. HERRICK.

KINGSLEY (2) deals with the development of *Crangon*.

On early stages of the development of *Lepas*, see NUSSBAUM.

PEREYASLAWZEWA, in treating of the development of *Amphipoda*, commences with that of *Gammarus pöciliurus*.

ROSLEJSKAJA describes the development of *Amphipoda* generally, and of *Orchestia littorea* in particular.

ROSSETER writes on the male generative organs of *Cypris*.

Miscellaneous.

Grapsicepon edwardsi is the first example of a Bopyrid being found parasitic on a Crustacean living in other than quiet waters. GIARD & BONNIER (1).

The 'Challenger' expedition has largely increased the number of known *Munida*. HENDERSON, p. 214.

Abnormality in *Platycarcinus pagurus*; FISCHER.

HILGENDORF treats of the orbit of *Gecarcinus*.

Latreillopsis, a new genus of the *Anomura*, is of special interest as connecting *Homola* with *Latreillia*. HENDERSON, p. 212.

KÖHLER, in a preliminary note, gives a fairly complete summary of his researches on the structure of the stalk of Cirripedes. He promises a more extended work, with plates.

ROSENSTADT gives an account of the anatomy of *Asellus aquaticus* and other *Isopoda*. His conclusions are chiefly corroborative of Schöll and Brandt.

SEMENOVSKY describes the anatomy of a fresh-water Gammarid (Russian).

Vascular System.

The blood-containing body cavity of *Arthropoda* (and *Mollusca*) is a distended and irregularly swollen vascular system. It may be called "hamocœle" instead of "cœlom." Each pair of valvular cardiac ostia represents a pair of ancestral tubular veins coming from the gills. The cœlom is represented by the generative glands and tubes, and the excretory glands and vesicles. There are remnants of cœlom in *Limulus*, in the inter-vascular spaces into which opens the nephridium which becomes the coxal gland. The tubular generative glands are perigonadal cœlom communicating with the exterior by modified nephridia. LANKESTER.

In the Crayfish, the Crab, and the Hermit-Crab, the blood-fluid, in

addition to its ordinary albuminoids, contains *amæbocytes* with a yellowish pigment, produced by a gland in the gill, traversed by oxygenated blood ; CUENOT.

BOUVIER (1) describes the vascular system of *Portunus puber*. For that of *Palinurus vulgaris* and *Platycarcinus pagurus*, see BOUVIER (2); and for that of the Crab, BOUVIER (3, 4). The vascular system of *Maia*, *Grapsus*, *Stenorhyncus*, &c., are treated of in BOUVIER (5).

Sense Organs.

The abyssal *Galathodea* are mostly blind. The eyes have degenerated but are not reduced in size. A corneal surface is present, but no pigment. Blind species possess longer antennæ. HENDERSON, p. 213.

Certain deep-sea species are blind, while others, belonging to the same group at similar depths, see well. The latter have probably migrated into deep-sea water at an earlier period, and had no time to undergo modification. *Id.* p. 214.

The eyes of *Serolidæ* and *Cymothoidæ* differ from the compound eyes of all other Crustaceans in the structure of the retinulæ. The differentiation of the retinulæ of *Serolis schythei* into clear and pigment cells recalls the eyes of some Annelids and Molluscs. The eye is diplostichous. The views of Grenacher on this subject are probably more correct than those of Patten. BEDDARD.

For the structure of the eyes of *Ampeliscidæ*, see DELLA VALLE.

KINGSLEY (3) deals with the development of the compound eye of *Crangon*.

PATTEN, in his "Eyes of Arthropods," deals chiefly with *Insecta*, but touches slightly on *Crustacea*.

Respiratory Organs.

Paguridea found at a great depth (e.g., 2000 fath.) shew a modification of branchial leaflets, tending in the direction of the trichobranchiate type, with diminished respiratory surface. This fact, which is contrary to the general rule, seems to shew that the trichobranchiate form is ancestral, and that certain *Paguridea* are descendants of trichobranchiate *Macrura*. HENDERSON, p. 212.

Nervous System.

For the nervous system of *Decapoda*, see BOUVIER (6).

PETIT describes the innervation of Crab's claws. See Physiology.

Digestive and Excretory Organs.

GRIFFITH finds that the Green glands of *Astacus* are truly renal, but that the so-called "livers" of *Crustacea* are pancreatic.

Excretion in *Brachyura*; MARCHAL.

For an account, mainly physiological, of the digestive organs of the Crab, see STAMATI.

Appendages.

Palps of *Crustacea* are not homologous with those of *Insecta*. The real homologues of the latter are the endopodites of the second pair of maxillæ and the three pairs of maxillipedes. The maxillipedes of *Crustacea*—at all events, of the *Brachyura*—are not used in seizing food. The mandibles alone in Crabs are masticatory. The mandibular palp has no directive function, as suggested by Dugès and Rolleston, nor has it been observed so to act in other *Crustacea*. *Isopoda* and *Amphipoda* are not seriously affected by loss of the endopodites of the maxillipedes. PLATEAU (2).

AMANS, in discussing the organs of aquatic locomotion, touches on *Crustacea* (*Apus* and *Langustus*), p. 126.

BERGENDAL records the occurrence of claspers in certain female Crayfish.

Abnormal chelæ in *Brachyura* are described by LE SÉNÉCHAL.

IV.—PHYSIOLOGY.

SCHWABZ describes the so-called mucous gland in *Cypris monacha*. He finds that its function is to isolate the spermatozoa which lie collected in masses in front of it, and to pump them onward. Morphologically it is an invagination of the vas deferens.

There are two forms of *Amœbocytes* to be observed in *Astacus*—granular and hyaline. These represent two stages, the granular being perfect and functional. Their function has no relation to hæmatosis, but they contain in the granules the ferment which assists in assimilating the peptones, &c. GATTANEO.

PETIT finds that the lesion of the left side of the supra-oesophageal ganglion of *Carcinus mœnas* results in the animal describing a series of circles in the direction of the hands of a watch, but the head may be directed centrally or peripherally. The motion was reversed on lesion of the right side.

For the structure of the test of *Arthropoda*, see POUCHET.

The cutaneous glands of the Crab; POUCHET & WERTHEIMER.

BIEDERMANN concludes that all the observed consequences of indirect stimulation of the claw muscles of the Crab seem to find their simplest explanation in the supposition that each of the two muscles is provided with two functionally distinct inhibiting and stimulatory nerves. In several respects, as Gaskell points out, there are analogies between the innervation conditions of the cardiac muscles of Vertebrates and those of the claw muscles of Crabs.

For an account of the glutiniferous gland and of the eyes of *Ampe-liscidæ*, see DELLA VALLE.

The striped muscle in *Arthropoda* is discussed by GEHUCHTEN.

GILSON, discussing spermatogenesis in *Arthropoda*, deals with certain *Crustacea*. His conclusions will be found on p. 69. On p. 85 is given a bibliography of the subject.

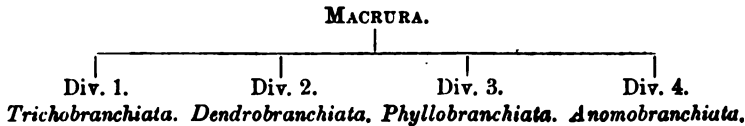
For the intercoxal lobe of Crayfishes, see MACKAY.

Elementary histology of the Crayfish ; OSBORN.

For research on the gastric juices of the Crab, see STAMATI (2, 3).

V.—CLASSIFICATION.

BATE proposes the following classification of *Macrura* :—



I. TRICHOBRANCHIATA.

(1) NORMALIA.

	Fam.
Tribe 1. <i>Synaxidea</i> . . .	{ <i>Scyllaridæ.</i> <i>Palinuridæ.</i>
Tribe 2. <i>Astacidea</i> . . .	{ <i>Euryonidæ.</i> <i>Homaridæ.</i> <i>Astacidæ.</i>
Tribe 3. <i>Stenophidea</i> . .	<i>Stenophidæ.</i>

(2) ABERRANTIA.

{ <i>Galathæidæ.</i> <i>Pylochelidæ.</i> <i>Thalassinidæ.</i> <i>Callianassidæ.</i> <i>Asciidæ.</i> <i>Thaumastochelidæ.</i>

II. DENDROBRANCHIATA.

(1) NORMALIA.

Tribe <i>Peneidea</i>	{ <i>Peneidæ.</i> <i>Sergestidæ.</i>
-------------------------------	---

(2) ABERRANTIA.

Tribe <i>Schizopoda</i> . . .	{ <i>Euphausidæ.</i> <i>Lophogastridæ.</i> <i>Eucopidæ.</i> <i>Mysidæ.</i>
-------------------------------	---

III. PHYLLOBRANCHIATA.

(1) NORMALIA.

Tribe 1. <i>Crangonidea</i> . .	<i>Crangonidæ.</i> <i>Nikidæ.</i>
Tribe 2. <i>Polycarpidea</i> . .	{ <i>Alpheidæ.</i> <i>Hippolytidæ.</i> <i>Pandalidæ.</i>

	Fam.
	<i>Thalassocaridæ.</i>
	<i>Atylidæ.</i>
	<i>Pontoniidæ.</i>
	<i>Caricyphidæ.</i>
	<i>Acanthephyridæ.</i>
Tribe 3. <i>Monocarpidea</i>	<i>Palæmonidæ.</i>
	<i>Nematocarcinidæ.</i>
	<i>Tropiocaridæ.</i>
	<i>Stylodactylidæ.</i>
	<i>Pasiphaidæ.</i>
	<i>Oodeopidæ.</i>
Tribe 4. <i>Haplopodea</i>	<i>Hecarthropidæ.</i>

HUDENDORF remarks on Eylmann's systematic arrangement of *Daphnidæ*.

VI.—PALÆONTOLOGY.

Silurian *Ostracoda* from Gottland; JONES.

Italian Miocene *Crustacea*; RISTORI.

VII.—GEOGRAPHICAL DISTRIBUTION.

Paguridea and *Galatheidea* are found at abyssal depths. No *Dromidea* are found deeper than 500 fath. *Raninidæ* are confined to shallow water, and *Hippidea* are littoral. HENDERSON, p. 211.

An account of the geographical distribution of the 'Challenger' *Anomura* will be found in HENDERSON, pp. 197-204, and of the bathymetrical distribution on pp. 205-209.

On the *Crustacea* of the Azores, see BARROIS.

BATE reports on about 2000 specimens of *Macrura*, collected on the 'Challenger' expedition, from various regions.

For an account of the species of *Galathea* taken on the coasts of France, see BONNIER (1).

BONNIER (2, 3) gives a catalogue of *Malacostraca* from the Bay of Concarneau.

For French marine free *Copepoda*, see CANU (3).

CHEVREUX (1) treats of certain *Amphipoda* collected near Cherchell, on the coast of Algeria, without the use of the drag.

Orchestia chevreuxi found at Teneriffe; CHEVREUX (3).

For the geographical distribution of French *Amphipoda*, see CHEVREUX (4).

DADAY treats of the *Cladocera* of Hungary.

For the *Cytherida* of the Ostsee, see DAHL.

DOLLFUS (2) gives a preliminary catalogue of French terrestrial *Isopoda*.

On certain littoral *Isopoda* of the Azores, collected on the third voyage of the 'Hirondelle,' see DOLLFUS (3).

GIESBRECHT deals with Italian pelagic *Copepoda*.

The podophthalmatous *Crustacea* of the Bay of Marseilles; GOURRET. The *Crustacea* of the Caspian; GRIMM (Russian).

In his Natural History of France, pt. 15, GROULT deals briefly with *Crustacea*.

DE GUERNE (2) describes two new species of *Diaptomus* from Algeria. The same author and J. RICHARD deal with the geographical distribution of the genus, which they shew to be probably cosmopolitan.

For the marine *Malacostraca* of W. Greenland, see HANSEN.

In his Preliminary Report on the Fauna of Plymouth Sound, HEAPE treats of *Crustacea*, on pp. 170-178.

HENDERSON, in his 'Challenger' *Anomura*, describes 161 species from various regions.

HERDMAN gives an account of *Crustacea* taken off Liverpool with the use of the electric light.

For rare *Crustacea* from the coast of France, see HESSE.

Fresh-water fauna of the Voages; IMHOR.

Silurian *Ostracoda* from Gotthland; JONES.

DE KERVILLE issues his first list of the *Crustacea* of Normandy.

The *Crustacea* of the neighbourhood of Moscow, to the number of 92 species (2 new), will be found treated by KORTSCHAGIN (Russian).

Two new species of *Diaptomus* from N. Europe; LILLJEBORG.

Dromia vulgaris in Cornwall; LOVETT.

DE MAN continues to report on the Podophthalmatous *Crustacea* of the Mergui Archipelago.

In describing the *Calanida* of Finland, NORDQUIST deals with 12 species, 2 of which are new.

OSORIO continues to catalogue the *Crustacea* collected in W. Africa, and at present in the Natural History Museum at Lisbon.

The *Crustacea* of S. Georgia; PFEFFER.

French non-marine *Cladocera* and *Copepoda*; RICHARD (2).

Pelagic fauna of the Auvergne Lakes; *id.* (3).

Italian Miocene *Crustacea*; RISTORI.

ROBERTSON gives the names of 107 species of *Amphipoda*, and 41 species of *Isopoda*, from the Firth of Clyde.

SARS describes 11 species of Australian *Cladocera* (5 new).

The *Ostracoda* of Messina are dealt with by SEGUENZA.

SMITH reports on the *Decapoda* of the E. coast of the United States.

For Slavonic *Crustacea*, see SOŠTERIĆ. Pp. 108-110 are occupied with a bibliography of the subject. The remainder of the paper is systematic.

EYLMANN gives, on p. 80, a tabulated view of the geographical distribution of European Daphnids.

For the fresh-water *Crustacea* of the neighbourhood of Kiev, see SOWINSKY. 103 species are described.

A parasitic Copepod from Beaumaris is described by THOMPSON (1). In his second paper he gives an account of the *Copepoda* of Madeira and the Canary Islands.

Two new Belgic *Crustacea* are described by VINCENT.

WALTER (1) commences his account of the Transcaspian *Crustacea*, with a paper on the *Entomostraca* of that region, under the heads : A, *Phyllopoda* ; B, *Cladocera* ; C, *Copepoda*.

ZACHARIAS gives an account of the *Crustacea* of the Bordesholmer, Plöner, Schwerina, and Müritz Lakes, in N. Germany.

Two new S. Australian *Crustacea* are described by ZIETZ.

NORDQUIST, in his Finnish *Calanida*, tabulates the distribution in the N. Ost-see, on p. 199, and in the Finnish Lakes, on p. 211.

ARACHNIDA.

BY

R. INNES POOCK.

TITLES OF FAUNISTIC AND SYSTEMATIC PAPERS.

- ATKINSON, G. F. New instances of Protective Resemblance in Spiders. *Am. Nat.* xxii, pp. 545 & 546.
- BALZAN, ALOYS. (1) *Chernetidæ nonnullæ* sud. Americanæ. Pts. I & II. Berlin (R. Friedländer & Sohn): 1887. [Not seen by Recorder in 1887.]
- . (2) *Chernetidæ nonnullæ* sud. Americanæ. Pt. III. Berlin (R. Friedländer & Sohn): 1888.
- BECKER, A. Die Spinnen und fortgesetzte Mittheilung über bei Sarepta vorkommende Insekten. *Bull. Mosc.* 1888, pp. 373-379.
- BERLESE, A. (1) Acari, Myriopoda, et Scorpiones, hucusque in Italia reperta. Pts. XLVI-LI. Padova: 1888.
- . (2) Acari Austro-Americani quos collegit Aloysius Balzan. *Bull. Soc. Ent. Ital.* xx, pp. 171- .
- CANESTRINI, G. (1) Prospetto dell' Acarofauna Italiana. Famiglie: Tarsonemini e Tiroglifini e Appendice agli Analgesini, iii, pp. 309-425, pls. xx-xxxvi. Padova: 1888.
- . (2) Intorno ad alcuni Acari ed Opilionidi dell' America. *Atti Soc. Ven.-Trent.* xi, pp. 100-111.
- DUGÈS, A. (1) Description d'un nouvel Ixodide. *Bull. Soc. Z. Fr.* xiii, pp. 129-133.
- . (2) Description de *Geckobia oblonga*, n. sp. *T. c.* pp. 14-16.
- GOURRET, P. Recherches sur les Arachnides tertiaires d'Aix en Provence. *Rec. Z. Suisse*, iv, pp. 431-496.
- HANCOCK, J. Description of *Datames magna* (Hancock). *P. Am. Phil. Soc.* xxv, pp. 107-110.

- HASSELT, A. W. M. VAN. *Araneæ exoticæ quas collegit pro Museo Lugdunensi Dr. H. Ten Kate Jr. in Guyanâ Hollandicâ (Surinam).* Tijdschr. Ent. xxxi, pt. 3, pp. 165-200, pls. v & vi.
- KARSCH, F. (1) *Scorpione mit Kreisförmigen Stigmen.* Zool. Anz. xi, pp. 15 & 16.
- (2) *Eine verkannte deutsch Spinne.* B. E. Z. xxxii, pp. 483-486.
- KOENIKE, F. (1) *Eine neue Hydrachnide aus dem Karrasch-See bei Deutsch-Eylan.* Schr. Ges. Danz. vii, pp. 1-5, 1 pl.
- (2) *Eine neue Hydrachnide aus schwach sabyhaltigem Wassen.* Abh. Ver. Brem. x, pp. 273-293, pl. iii.
- KULCZYNSKI, W. *Przyczynek do Tyrolskiej Fauny Pajęczaków.* Rozpraw Wydz. matem.-przyr. Akad. Umiej. xvi, pp. 245-356, pls. v-viii (1887).
- *LOHMANN, H. *Die unterfamilie der Halacaridæ und die Meersmilben der Ostsee.* Inaug. diss. Kiel, pp. 1-140, pls. i-iii. [See Abstract by Dr. BERTEAU, in Arch. f. Nat. 1889, p. 36.]
- MARX, G. (1) *New Species of Theraphosidæ.* P. Ent. Wash. i, pp. 116 & 117.
- (2) *On a New and Interesting Spider, Hypochilus thorellii.* Ent. Am. iv, pp. 160-162.
- (3) [Synonymy of Wood's types of Scorpions.] P. Ent. Wash. i, p. 91.
- McCook, H. (1) *Descriptive notes of new American Species of Orb-weaving Spiders.* P. Ac. Philad. 1888, pp. 193-199.
- (2) *A new fossil Spider, Eoatypus woodwardii.* T. c. pp. 200-202.
- MICHAEL, A. D. *British Oribatidæ.* II. London: Ray Society.
- MONIEZ, B. *Note sur une Hydrachnide marine.* Rev. Biol. ii, pp. 64-68, with figs.
- OATES, E. W. *On the Indian and Burmese Scorpions of the genus Isometrus, with descriptions of three new species.* J. A. S. (Bombay) iii, pp. 244-250, 1 pl.
- PECKHAM, G. W., & E. G. (1) *North American Spiders of the family Attidæ.* Tr. Wisconsin Acad. 1888, pp. 1-104.
- , & WHEELER, W. H. (2) *Spiders of the subfamily Lyssomanæ.* T. c. pp. 222-256, pls. xi & xii.
- POCOCK, R. I. (1) *The Species of the Genus Urodacus contained in the Collection of the British Museum.* Ann. N. H. (6) ii, pp. 169-175, pl. viii.
- (2) *On the African Specimens of the Genus Scorpio (Linn.), contained in the Collection of the British Museum.* T. c. pp. 245-255.
- (3) *On the Myriopoda, Arachnida, and Land Crustacea of Christmas Island.* P. Z. S. 1888, pp. 556-560.

- POPPE, S. A. Ueber parasitische Milben. Abh. Ver. Brem. x, pp. 205-237, pl. ii.
- ROVELLI, G., & GRASSI, B. Di un singolare Acaride, *Podapolipus reconditus*. Bull. Soc. Ital. 1888, pp. 59-63, pl. xv.
- SIMON, E. (1) Arachnides recueillis dans le sud de l'Afrique par le Dr. Hans Schinz. Ann. Soc. Ent. Fr. vii, pp. 369-384.
- . (2) Descriptions d'espèces et de genres nouveaux de l'Amerique centrale et des Antilles et observations diverses. Op. cit. viii, pp. 203-216.
- . (3) Descriptions de quelques Arachnides du Chili et remarques synonymiques sur quelques-uns des espèces décrites par Nicolet. T. c. pp. 217-222.
- . (4) Descriptions d'espèces et de genres nouveaux de Madagascar et de Mayotte. T. c. pp. 223-236.
- . (5) Descriptions d'espèces et de genres nouveaux de Nouvelle-Calédonie. T. c. pp. 237-247.
- . (6) Descriptions de quelques espèces recueillis au Japon par A. Mellottée. T. c. pp. 248-252.
- . (7) Étude sur les Arachnides de l'Asie méridionale faisant partie des collections de l'Indian Museum (Calcutta). II. Arachnides recueillis aux îles Andaman par M. R. D. Oldham. J. A. S. B. lvii, pp. 282-287.
- . (8) Aracnidos del gabinete de Historia Natural de la Universidad de Sevilla. An. Soc. Esp. xvii, pp. 37-41.
- THORELL, T. Pedipalpi e Scorpioni dell' Archipelago malesi conservati nel Museo Civico di Storia Naturale di Genova. Ann. Mus. Genov. vi, pp. 327-428.
- TROUSSERT, E. L. (1) Diagnoses d'espèces nouvelles de *Sarcoptides plumicoles* (Analgesinæ). Bull. Sci. Nord. (3) i, pp. 325-380, 6 pls.
- , & NEWMANN, G. (2) Types nouveaux de *Sarcoptides epidermicoles* et *psoriques*. Bull. Soc. Angers, 1887, pp. 111-150.
- . (3) Note sur les Acariens marins recueillis par M. Giard au laboratoire maritime de Wimereux. C.R. ovii, pp. 753 & 754.
- WARBURTON, C. On a new species of Spider, with some observations on the habits of certain *Araneina*. P. Cambr. Phil. Soc. vi, pp. 128 & 129.

DISTRIBUTION.

PALÆARCTIC REGION.

Britain. *Oribatidæ*, MICHAEL; *Araneidea*, WARBURTON.

Italy. *Acaridea*, BERLESE (1), CANESTRINI (1).

Spain. *Araneidea*, SIMON (8).

Tyrol. *Araneidea*, *Phalangidea*, *Pseudoscorpionidea*, *Scorpionidea*,

KULCZYNSKI.

4 Arachn.

ARACHNIDA.

Sarepta. *Araneidea*, BECKER.

Japan. *Araneidea*, SIMON (6).

ORIENTAL REGION.

India and Burma. Species of *Isometrus*, OATES.

Malaysia. *Scorpionidea*, *Pedipalpi*, THORELL.

Andaman Is. *Araneidea*, SIMON (7).

Christmas I. *Araneidea*, POCKOCK (3).

AUSTRALIAN REGION.

New Caledonia. *Araneidea*, SIMON (5).

Various parts of Australia. Species of *Urodacus*; POCKOCK (1).

ETHIOPIAN REGION.

African species of Scorio, POCKOCK (2).

Madagascar and Mayotte. *Araneidea*, SIMON (4).

S. Africa. *Araneidea*, *Scorpionidea*, *Solpugidea*, SIMON (1).

NEARCTIC REGION.

Attida, PECKHAM (1, 2); *Epeirida*, MCCOOK; also the papers by MARX.

NEOTROPICAL REGION.

Central America and Antilles. *Araneidea*, SIMON (2).

Brazil. *Chernetida*, BALZAN; *Acaridea*, BERLESE (2); *Acaridea* and

Phalangidea, CANESTRINI (2).

Surinam. *Araneidea*, VAN HASSELT.

Chili. *Araneidea*, SIMON (3).

GENERAL.

POUCHET, G. Sur la nature du test des Arthropodes. C.R. Soc. Biol. v, pp. 685-688.

LOMAN, J. O. O. Altes und neues über das Nephridium (die Coxaldrüse) der Arachniden. Bijdr. Dierk. xiv, pp. 89-97.

ARANEIDEA.

ATKINSON, G. F. New instances of Protective Resemblance in Spiders. Am. Nat. xxii, pp. 545 & 546.

Observations on a species of *Thomisus* and on a new species of *Cyrtarachne*. The first resembled, when at rest, a spicule of a blade of grass, and the latter the shell of a snail.

——. Note on the Tube-inhabiting Spider, *Lycosa fatifera* (Hentz). T. c. p. 546.

——. The use of Two Doors in a Trap-door Spider's Nest (*Myrmekia-phila foliata*). Psyche, v, pp. 88 & 89.

BERTKAU, PH. Ueber *Mermis* in *Tarantula inquilina*, &c. CB. Ver. Rheinl. xlv, pp. 91 & 92.

EMERTON, J. Habits of *Mygale* in confinement. Psyche, v, p. 54.

GREEN, E. ERNEST. A Spider's deadly Foe. Sci. Goss. (July) 1888, p. 159.

A Spider from Ceylon attacked by the larva of a hymenopterous insect.

HOWARD, L. O. External Spider Parasites. *Ins. Life*, i, p. 42.

The parasite mentioned by Mr. Green (*cf. supra*) is the larva of an Ichneumonid—*Polysphincta*.

— Further concerning external Spider Parasites. *T. c.* p. 106.

Linyphia communis infested by *Polysphincta dictyna*.

KOBERT, — Über die giftigen Spinnen Russlands. *Biol. Centralbl.* viii, pp. 287 & 288; also *Z. Naturw.* 1888, p. 441.

Remarks on *Galeodes araneoides*, *Trochosa singoriensis*, and *Lathrodictes tredecimguttatus*.

LENDL, A. A pókok (*Araneina*) különösen a kerekhálós pókok (*Epeiridae*) természetes osztályozásának Kiserlate. *Ertes. math. természett.* vi, pp. 165–170; and *Ért. Term. Kor.* xviii (2) pp. 1–78.

An attempt to trace the phylogeny of the *Epeiridae*.

LUCAS, H. Sur le nid de l'*Argiope lobata*. *Bull. Soc. Ent. Fr.* viii, pp. lxi & lxii.

MARX, G. Respiration in *Epeira silvatica*. *P. Ent. Wash.* i, p. 12.

Id. describes, in *Lathrodictes mactans*, the mode of capturing insects by means of a sticky fluid exuded from the spinnerets. *T. c.* p. 12.

McCOOK, H. C. Double cocooning in a Spider. *P. Ac. Philad.* 1888, p. 425.

— Notes on the Relations of Structure and Function to Colour Changes in Spiders. *T. c.* pp. 172–176. [*Abstr.*, *J. R. Micr. Soc.* 1888, pp. 945 & 946.]

— Nesting Habits of the American Purseweb Spider (*Atypus abbottii*). *P. Ac. Philad.* 1888, pp. 203–228.

— The Turret Spider (*Lycosa arenicola*, Scud.) at Coffin's Heath. *T. c.* pp. 333–336.

POUJADE, G. A. Nouvelles observations sur les mœurs de l'Argyronète (*Argyroneta aquatica*, Clerck, *Aranea aquatica*, Linn.). *Ann. Soc. Ent. Fr.* viii, p. 69–76.

SAINT-RÉMY, G. Recherches sur le cerveau des Aranéides. *C.R.* ovii, pp. 926–929; *Rev. Sci.* xlii, p. 777.

Investigations into the structure of the brain in many genera of *Araneidea*.

WAGNER, W. La mue des Araignées. *Ann. Sci. Nat.* vi, pp. 281–393, pls. xvi–xviii.

An elaborate essay on the moulting of Spiders, with descriptions of the concomitant changes that occur in parts of the body other than the skin.

WAGNER, V. Du Sang des Araignées. *Arch. slav. Biol.* iv, pp. 297–336. [*Abstr.*, *J. R. Micr. Soc.* 1888, pp. 946 & 947.]

Histological observations.

WAGNER, W. Des poils nommés auditifs chez les Araignées. *Bull. Mosc.* 1888, pp. 119–134. [*Abstr.*, *J. R. Micr. Soc.* 1888, pp. 411 & 412.]

The hairs described by Dahl as auditory, have, in reality, no such

function. Of these hairs there are two kinds ; a very distinct third type was observed in a species of *Mygale*, the function of which is to perceive finer sensations, such as those produced by the approach of rain.

EMERTON, J. A. Walckenaer's names of American Spiders. *Psyche* v, pp. 113 & 114.

McCook, H. C. The value of Abbot's manuscript drawings of American Spiders. *P. Ac. Philad.* 1888, p. 428.

—. Necessity for revising the nomenclature of American Spiders. *T. c.* pp. 74-79.

EPEIRIDÆ.

Epeira gemma, n. sp., San Diego (California), Victoria, p. 193, figs. 1 & 2 ; *bicentennaria*, n. sp., Ohio, Pennsylvania, p. 194, figs. 3 & 5 ; *silvatica*, p. 195, fig. 4, compared with preceding ; *vertebra*, n. sp., San Diego (California), p. 196, figs. 6-10 ; *balaustina*, n. sp., Florida, San Domingo, p. 198 ; *parvula*, n. var. *conchlea*, Wisconsin, California, p. 199, fig. 6 ; McCook (1).

Epeira messalina, n. sp., Surinam, p. 181, pl. vi, figs. 1 & 2 ; *musiva*, n. sp., Surinam, p. 184, pl. v, figs. 5-7 ; HASSELT.

Diphyia (Nic.) syn. *Azilia* (Keys.), p. 217, *macrophthalmia* (Nic.), Valdivia, p. 217, SIMON (3) ; *pumila*, n. sp., Madagascar, p. 226 ; *id.* (4).

Cyrtarachne multilineata, n. sp., Carolina, p. 546 ; ATKINSON.

Polys vesicularis, n. sp., Madagascar, p. 225 ; SIMON (4).

Zilla thorellii and *Z. kochii*, differences pointed out ; KARSCH (2).

Singa scabristermis, n. sp., Tyrol, p. 306 ; KULCZYNSKI.

Glitastra, n. g., near *Nephila*, *episinoides*, n. sp., p. 226, Mayotte ; SIMON (4).

Cyclosa albisternis, n. sp., Port Blair, p. 285, SIMON (7) ; *tubicola*, n. sp., S. Africa, p. 373 ; *id.* (1).

Synopsis of species of *Cyclosa*, p. 483 ; KARSCH (2).

THERIDIONIDÆ.

Episus truncatus (Latr.) and *E. lugubris* (Sim.) compared, p. 308 ; KULCZYNSKI.

Theridium lupidicola, n. sp., Tyrol, p. 309 ; *id. t. c.*

Pedanoctethus lirus (Bkew.), Tyrol, p. 312 ; *truncorum* (L. Koch), p. 314 ; *id. t. c.*

Bolyphantes indez (Thor.), Tyrol, p. 316 ; *id. t. c.*

Lepthyphantes variabilis, n. sp., p. 322 ; *notabilis*, n. sp., Tyrol, p. 326 ; *id. t. c.*

Bathyphantes (?) *cyaneo-nitens*, n. sp., Tyrol, p. 328 ; *id. t. c.*

Tmeticus silvicola, n. sp., Tyrol, p. 330 ; *id. t. c.*

Entelecara media, n. sp., Tyrol, p. 332 ; *id. t. c.*

Ezechocentrus, n. g., near *Gelanor*, *lancearius*, n. sp., Madagascar, p. 227 ; SIMON (4).

Arcys perlatus, n. sp., Noumea, p. 240 ; *id.* (5).

Thyreobæus, n. g., near *Aræoncus*, *scutigera*, n. sp., Madagascar, p. 228 ; *id.* (4).

- Theridula perlata*, n. sp., Madagascar, p. 228 ; *id. t. c.*
Crustulina ambigua, n. sp., Madagascar, p. 229 ; *id. t. c.*
Mastostigmus, n. g., near *Euryopis*, *decemperlatus*, n. sp., Madagascar, p. 230 ; *id. t. c.*
Trigonobothrys, n. g., near *Euryopis*, *excisus*, n. sp., Madagascar, p. 230 ; *id. t. c.*
Euryopis nubila, n. sp., Pondicherry, p. 252 ; *mustelina*, n. sp., Yokohama, p. 251 ; *id. (6).*
Ariamnes cylindrogaster, n. sp., Yokohama, p. 251 ; *id. t. c.*
Moneta triquetra, n. sp., Noumea, p. 241 ; *id. (5).*
Phylarcus, for *Phycus* preoccupied, *splendidus*, n. sp., Noumea, p. 241 ; *id. t. c.*
Lathrodectes geographicus, n. sp., Surinam, p. 176, pl. v, figs. 1-4 ; HASSELT.

PHOLCIDÆ.

- Pholcus cyaneus* (Tacz.), Surinam, p. 171 ; HASSELT.
Hypochilus, n. g., *thorellii*, n. sp., Tennessee, p. 160, with pl. ; MARX (2).

UROCTEIDÆ.

- Uroctea schinzi*, n. sp., p. 370, S. Africa ; SIMON (1).

ZODARIIDÆ.

- Storena lycosoides* (Nic.), p. 218 ; *elegans* (Nic.), Valdivia, p. 218, SIMON (3) : *rugosa*, n. sp., Noumea (New Caledonia), p. 242 ; *id. (5).*
Storenomorpha angusta, n. sp., Madagascar, p. 231 ; *id. (4).*

DINOPIDÆ.

- Avella neo-caledonica*, n. sp., Noumea, p. 242 ; SIMON (5).

BRADYSTICHIDÆ.

- Geræsta*, n. g., p. 224, *hirta*, n. sp., Madagascar, p. 225 ; SIMON (4).

THOMISIDÆ.

- Xysticus lateralis* (Hahn), n. var. *alpinus*, Tyrol, p. 302 ; KULCZYNSKI.
Thanatus alpinus, n. sp., Tyrol, p. 304 ; *id.*

SPARASSIDÆ.

- Lauricius*, n. g., near *Hemiclæa*, *hemiclæinus*, n. sp., Ciudad (Mexico), p. 208 ; SIMON (2).
Staianus, n. g., near *Sparianthis*, p. 223, *acuminatus*, n. sp., Madagascar, p. 224 ; *id. (4).*

AGALENIDÆ.

- Celotes mediocris*, n. sp., Tyrol, p. 337 ; synopsis of species, p. 341 ; KULCZYNSKI.

- Myro chilensis*, n. sp., Valdivia, p. 218; SIMON (3).
Cyrioceta, n. g., has for type *Dr. spinifer* (Nic.), p. 219; *id. t. c.*
Cydrela rutilans, n. sp., p. 370, pl. vi, fig. 1; *crassimana*, n. sp., p. 371,
 S. Africa: *id.* (1).

ZOROPSIDÆ.

- Zorocrates*, n. g., near *Zoropsis*, p. 211, *fusca*, n. sp., Mexico, p. 212;
 SIMON (2).

FILISTATIDÆ.

- Filistata capitata* (Hentz), Surinam, described, p. 171; HASSELT.

ATTIDÆ.

- Homalattus phæniceus*, n. sp., Mexico, p. 204; SIMON (2).
Attus alpicola, n. sp., Tyrol, p. 285; KULCZYNSKI.
Attus branickii (Tacz.), Surinam, p. 196; *crasus*, n. sp., Surinam, p. 196,
 pl. vi, figs. 3 & 4; HASSELT.
Habrocestum locuples, n. sp., San Domingo, p. 204; SIMON (2); *schinzi*,
 n. sp., S. Africa, p. 269; *id.* (1).
Mogrus cephalotes, n. sp., Haiti, p. 204; *id.* (2).
Dynamius, n. g., syn. *Jotus*, Peckham, non L. Koch, allied to *Zenodoro*,
 Peckham, p. 204, *elegantissimus*, n. sp., San Domingo, p. 205; *id. t. c.*
Mavia neo-caledonica, n. sp., Noumea, p. 237; *id.* (5); *mellotiei*, n. sp.,
 Yokohama, p. 248; *id.* (6).
Euophrys longipalpis, n. sp., p. 237, Noumea; *id.* (5).
Ergane dispar, n. sp., p. 238, Noumea; *id. t. c.*
Stergusa, n. g., near *Hasarius*, p. 239, *improbula*, n. sp., Noumea, p. 239;
id. t. c.
Laufeia, n. g., near *Hasarius*, p. 248, *ænea*, n. sp., Yokohama, p. 249;
id. (6).
Siler, n. g., near *Trita*, p. 249, *cupreus*, n. sp., Yokohama, p. 250;
id. t. c.
Cytza albolimbata, n. sp., Port Blair, p. 282; *id.* (7).
Cyllobelus miniaceomicans, n. sp., Port Blair, p. 283, *id. t. c.*
 PECKHAM (1) describes:—
Phidippus characterized, p. 11; *morsitans* (Walck.), syn. *audax*, *tripunc-*
tatus (Hentz), *variegatus*, *purpurifer*, *smaragdifer*, *alchymista*, *rufimanus*,
lunulatus, *mundulus* (C. Koch.), United States, p. 11, pls. i, fig. 1, & ii,
 fig. 1; *rufus* (Hentz), syn. *castaneus* (Hentz), *ruber* (Keys.), United
 States, p. 13, pls. i, fig. 2a, & ii, fig. 2; *galathea* (Walck.), syn. *mystaceus*
 (Hentz), *asinarius* (C. Koch), Eastern United States, p. 14, pl. i, fig. 3;
cardinalis (Hentz), S. United States, p. 15, pl. ii, fig. 4; *miniatus* (Peckh.),
 Florida, Texas, p. 15, pl. i, fig. 6; *obscurus*, n. sp., Texas, p. 16, pls. i,
 fig. 5, & ii, fig. 5; *mccookii* (Peckh.), Pennsylvania, p. 17, pl. ii, fig. 9;
arizonensis (Peckh.), Arizona, Texas, California, p. 18, pls. i, fig. 10, & ii.

fig. 10; *albomaculatus* (Keys.), United States, p. 19, pls. i, fig. 13, & ii, fig. 13; *opifex* (McCook), California, p. 20, pl. ii, fig. 11; *johnsonii* (Peckh.), Washington, p. 20, pls. i, fig. 14, & ii, fig. 14; *octo-punctatus* (Peckh.), Missouri, p. 21, pl. ii, fig. 15; *vanterbergii*, n. sp., Texas, p. 22, pl. i, fig. 8, & ii, fig. 8; *mexicanus*, n. sp., Mexico, p. 23, pl. ii, fig. 7; *insolens* (Hentz), syn. *podogrosus* (Hentz), *coloradensis* (Thor.), Georgia, Florida, Colorado, p. 23, pls. i, fig. 12, & ii, fig. 12; *otiosus* (Hentz), Georgia, Alabama, p. 25, pls. i, fig. 15, & ii, fig. 15.

Philæus (Thor.), p. 25, *farnesus*, n. sp., Texas, p. 26, pl. ii, fig. 16; *fertilis*, n. sp., Mexico, p. 27, pl. ii, fig. 17; *mexicanus*, n. sp., Mexico, p. 28, pls. i, fig. 18, & ii, fig. 18; *militaris* (Hentz), syn. *aurigera*, ? *asinarius* (C. Koch), United States, Mexico, p. 28, pls. i, fig. 19, & ii, fig. 19; *chrysis* (Walck.), syn. *iris* (Walck.), *aurealceus* (C. Koch), Mexico, Guatemala, S. Carolina, Georgia, p. 30, pls. i, fig. 20, ii, fig. 20, & iii, fig. 20a; *princeps* (Peckh.), Pennsylvania, p. 31, pl. iii, fig. 21; *rimator* (Walck.), syn. *auctus* (C. Koch), *formosus* (Peckh.), Pennsylvania, Florida, Iowa, p. 32, pl. i, fig. 22.

Plexippus puerperus (Hentz), syn. *silvanus* (Hentz), *pallida* (C. Koch), *branickii* (Tacz.), *agrestis* (Peckh.), California, Texas, Florida, Mexico, Guatemala, New Grenada, Brazil, p. 33, pls. i, fig. 23, ii, fig. 23a, & iii, fig. 23b; *putnamii* (Peckh.), Iowa, p. 35, pl. iii, fig. 24.

Dendryphantès capitatus (Hentz), syn. *parvus* (Hentz), *æstivalis* (Peckh.), United States, Mexico, p. 36, pls. i, fig. 25, & iii, fig. 25a; *elegans* (Hentz), syn. *superciliosus* (Hentz), *crinata* (C. Koch), *tibialis* (Peckh.), Eastern, Central, Southern United States, p. 37, pls. iii, fig. 26, & iv, fig. 26; *flavus*, n. sp., New York, p. 39, pls. i, fig. 27, & iii, fig. 27; *multicolor* (Hentz), Pennsylvania, Alabama, p. 40, pl. iii, fig. 28; *albo-immaculatus* (Peckh.), Iowa, New York, p. 41, pl. iii, fig. 29; *flavipedes*, n. sp., Canada, p. 42, pl. iii, fig. 29.

Attus palustris (Peckh.), Wisconsin, Michigan, p. 43, pls. i, fig. 30, & iii, fig. 30; *imperialis*, n. sp., California, p. 44, pl. iii, fig. 31.

Icius lineatus (C. Koch), syn. *quadrilineatus* (Peckh.), Pennsylvania, Wisconsin, Georgia, p. 45, pls. i, fig. 32, & iii, fig. 32; *palmarum* (Hentz), New York, N. & S. Carolina, Alabama, Florida, p. 47, pls. i, fig. 33, & iii, fig. 33; *mitratus* (Hentz), syn. *morigerus* (Hentz), *pallidus* (C. Koch), Wisconsin, Pennsylvania, N. Carolina, Florida, p. 48, pls. i, fig. 34, iii, fig. 34a, & iv, fig. 34; *piraticus*, n. sp., Texas, p. 49, pls. i, fig. 35, & iv, fig. 35; *albovittatus* (Keys.), N. America, p. 50, pls. i, fig. 35a, & iv, fig. 35d.

Pseudicius harfordii, n. sp., California, p. 51, pls. i, fig. 36, iii, fig. 36, & iv, fig. 36a.

Sadala, n. g., near *Icius*, p. 52, *distincta*, n. sp., Mexico, p. 53, pls. i, fig. 70, & vi, fig. 76.

Eris octavus (Hentz), New York, Alabama, N. Carolina, Georgia, p. 54, pls. i, fig. 37, & iii, fig. 37; *barbipes*, n. sp., Mexico, p. 55, pl. iv, fig. 38; *nervosus*, n. sp., New York, p. 56, pls. i, fig. 39, & iii, fig. 39.

Hasarius hoyi (Peckh.), syn. *pinus* (Peckh.), Pennsylvania, New York, Wisconsin, p. 57, pls. i, fig. 40, & iv, fig. 40.

Hubrocestum (Simon), p. 58; *coronatum* (Hentz), Pennsylvania, Ala-

bama, Iowa, p. 59; *cæcatum* (Hentz), Pennsylvania, New York, Alabama, p. 60, pls. i, fig. 42, & iv, fig. 42; *viridipes* (Hentz), Texas, S. Carolina, p. 60, pls. i, fig. 43, & iv, fig. 43; *peregrinum* (Peckh.), New York, Connecticut, p. 61, pls. i, fig. 44, & iv, fig. 44; *cristatum* (Hentz), New York, Connecticut, Alabama, p. 62, pls. i, fig. 45, & iv, fig. 45; *auratum* (Hentz), New York, S. Carolina, Georgia, p. 63, pls. i, fig. 46, & iv, fig. 46; *hirsutum*, n. sp., Oregon, p. 64, pl. iv, fig. 47; *splendens* (Peckh.), syn. *nigroceps* (Keys.), Wisconsin, Massachusetts, p. 65, pls. i, fig. 48, & v, fig. 48; *oregonense*, n. sp., Oregon, p. 66, pl. v, fig. 49.

Saitia pulex (Hentz), syn. ? *officata* (C. Koch), New York, Pennsylvania, &c., p. 67, pls. i, fig. 50, & v, fig. 50; *cambridgii*, n. sp., Florida, p. 69, pls. i, fig. 51, & v, fig. 51.

Astia vittata (Hentz), syn. *undata*, *pencillata* (C. Koch), *niger* (Hentz), United States, p. 70, pls. i, fig. 52, & v, fig. 52; *morosa*, n. sp., California, p. 71, pls. i, fig. 53, & v, fig. 53.

Mævia californica, n. sp., California, p. 73, pl. v, fig. 54.

Cytæa minuta, n. sp., California, p. 73, pls. i, fig. 55, & v, fig. 55.

Cyrra tenuiola (Hentz), Pennsylvania, S. Carolina, Alabama, &c., p. 75, pls. i, fig. 56, iv, figs. 56a, & v, fig. 56.

Epiblemum scenicum (Clk. et auct.), N. America, Europe, N. Africa, p. 76, pls. i, fig. 57, & iv, fig. 57.

Admestina, n. g., p. 78, *wheelerii*, n. sp., Wisconsin, p. 78, pls. 1, fig. 58, & v, fig. 58.

Hycia pikei, n. sp., New York, S. Carolina, Florida, p. 79, pls. i, fig. 59, iv, fig. 59a, & v, fig. 59.

Marptusa familiaris (Hentz), syn. *undata*, *conspersa*, *varia* (C. Koch), United States, Mexico, p. 80, pls. 1, fig. 60, iv, fig. 60a, & v, fig. 60; *californica*, n. sp., California, p. 81, pls. 1, fig. 61, v, fig. 61, & vi, fig. 61a.

Menemerus melanognathus (Lucas), syn. *dissimilis* (C. Koch), *convergens* (Dol.), *muscorvus* (Vins.), *foliatus* (L. Koch), *nigro-limbatus* (Cambr.), *marita* (Karsch), *mannii* (Peckh.), everywhere, p. 82, pls. i, fig. 62, & vi, fig. 62; *paykullii* (Aud.), syn. *ligo* (Walck.), *binus* (Hentz), *vaillantii* (Lucas), *delibata* (L. Koch), everywhere, p. 84, pls. i, fig. 63, & vi, fig. 63.

Homalattus (White), p. 85, *cyaneus* (Hentz), syn. *chrysea* (C. Koch), *septentrionalis* (Keys.), Alabama, Georgia, p. 86, pls. i, fig. 64, & vi, fig. 64.

Ballus youngii, n. sp., Pennsylvania, p. 87, pls. i, fig. 66, & vi, fig. 66.

Neon nellii, n. sp., Pennsylvania, Canada, p. 88, pls. 1, fig. 65, & vi, fig. 65.

Zygoballus serpunctatus (Hentz), N. Carolina, Florida, p. 89, pls. i, fig. 67, & vi, fig. 67; *bottini*, n. sp., Wisconsin, Florida, p. 89, pls. i, fig. 68, & vi, fig. 68.

Agobardus anormalis (Keya.), United States, p. 90, pls. i, fig. 69, & vi, fig. 74.

Attus cautus, n. sp., Mexico, p. 92.

Synemosyna (Hentz), p. 93; *formica* (Hentz), syn. *gibberosus* (C. Koch), United States, p. 93, pl. vi, fig. 70.

Synageles picata (Hentz), N. Carolina, Alabama, Wisconsin, p. 94,

pl. vi, fig. 71 ; *scorpiona* (Hentz), New York, Ohio, N. Carolina, p. 95, pl. vi, fig. 72.

Lyssomanes (Hentz), p. 97, *viridis* (Hentz), S. United States, p. 97.

PECKHAM (2) describes :—

Lyssomanes (n. subgen. *Maroussa*) *antillanus*, n. sp., p. 226, pl. xi, fig. 1, San Domingo ; *unicolor* (Tacz.), p. 226, pls. xi, fig. 2, & xii, fig. 21, French Guiana, Peru ; *viridis* (Walck.), p. 228, pls. xi, fig. 2, & xii, fig. 6, S. United States ; *bikenianus*, n. sp., p. 229, pl. xi, fig. 4, Caracas ; *placidus*, n. sp., p. 229, pl. xi, fig. 5, Mexico ; *miniacus*, n. sp., p. 230, pl. xi, fig. 6, Rio Janeiro ; *austerus*, n. sp., p. 231, pls. xi, fig. 7, & xii, fig. 17, Rio Janeiro ; *modestus*, n. sp., p. 231, pl. xii, fig. 10, Madagascar ; *tristis*, n. sp., p. 232, pl. xii, fig. 12, Brazil ; (subgen. *Jelskia*) *tenuis*, n. sp., p. 233, pl. xi, fig. 8, Rio Janeiro ; *jamineus*, n. sp., p. 234, pls. xi, fig. 9, & xii, S. America ; *nigropictus*, n. sp., p. 235, pl. xi, fig. 10, Amazon ; *parallelus*, n. sp., p. 236, pl. xii, fig. 15 ; *velox*, n. sp., p. 237, pl. xi, fig. 11, Brazil ; *longipes* (Tacz.), p. 238, pl. xi, fig. 12, French Guiana ; *robustus* (Tacz.), p. 239, pls. xi, fig. 13, & xii, fig. 7, Peru ; *amazonicus*, n. sp., p. 240, pl. xii, figs. 1 & 16, Amazon ; *blandus*, n. sp., p. 241, pl. xii, fig. 13, Guatemala ; *pallens* (Blek.), p. 246.

Asamonea, p. 241, *puella* (Simon), p. 242, S. Africa ; *tenuipes* (Cambr.), p. 243, pl. xii, figs. 5 & 19, Ceylon ; *punctata*, n. sp., p. 244, pl. xii, fig. 20, Madagascar ; *ornatissima*, n. sp., p. 244, pl. xii, fig. 22, Madagascar ; *gracilis* (Tacz.), p. 245, pl. xii, fig. 2, French Guiana ; *flava*, n. sp., p. 246, pl. xii, fig. 18, Central America.

Athanas, p. 247, *whitmei* (Cambr.), p. 247, pl. xii, figs. 3 & 11, Tahiti, Upolu, Samoa.

Epeus, p. 250, *tener* (Simon), p. 251, Malamoy, Basilan I.

Simonella, p. 251, *americana* (Peckh.), p. 255, pl. xii, fig. 4 ; *myrmeriiformis* (Tacz.), p. 253, pl. xii, fig. 8, Cayenne ; *lucasi* (Tacz.), p. 254, pl. xii, fig. 9, Uassa (Guiana).

LYCOSIDÆ.

Lycosa subita (Sim.), syn. ? *strenua* (Thor.), p. 289 ; *ferruginea* (L. Koch.), syn. *blanda* (Sim.) ♀, p. 294 ; *giebelii* (Pav.), compared with the preceding species, pp. 292–294 ; *cincta*, n. sp., Tyrol, p. 295 ; *mixta*, n. sp., Tyrol, p. 299 ; KULCZYNSKI.

Sosippus, n. g., = *Dolomedes* (C. Koch) in part, p. 205 ; *mexicanus*, n. sp., Mexico, p. 206 ; SIMON (2).

Sphebanus marginatus, n. sp., Port Blair, p. 284 ; *id.* (7).

Saltwinus, n. g., = *Dolomedes* (C. Koch) in part ; type, *S. marginellus*, C. Koch, sub *Dolomedes* ; *scoparius*, n. sp., Mariquita (Orinoco) ; *id.* (2).

Tallonia, n. g., near *Ocyale picta*, n. sp., Nossi Bé, p. 223 ; *id.* (4).

Tarantula laeta (L. Koch), Surinam, p. 192 ; HASSELT.

Tricca, n. g., near *Lycosa japonica*, n. sp., p. 250, Yokohama ; SIMON (6).

DRASSIDÆ.

Prosthesima similis, n. sp., Tyrol, p. 343 ; KULCZYNSKI.

Miturgina, n. g., *vittata*, n. sp., Noumea, p. 244 ; SIMON (5)

Cluilus, n. g., near *Clubiona*, for *Cl. elegans* and *chilensis*, Nic., p. 220 ; *id.* (3).

Strotarchus, n. g., near *Clubiona*, p. 210, *nebulosus*, n. sp., Presidio, p. 211 ; *id.* (2).

Leptoctenus tenkatei, n. sp., Surinam, p. 192, HASSELT (referred by author to the *Lycosidæ*).

Leptoctenus byrrhus, n. sp., Mexico, p. 210 ; SIMON (2).

Vulsor, n. g., *bidens*, n. sp., Mayotte, p. 233 ; *id.* (4).

Viridasius, n. g., *pulchripes*, n. sp., Nossi Bé, p. 233 ; *id.* t. c.

Xeropigo scutulatus, n. sp., Guadeloupe, p. 209 ; *id.* (2).

Asemesthes, n. g., allied to *Pythonissa*, *subnubilus*, n. sp., p. 273, S. Africa ; *id.* (1).

Creugas cinnamius, n. sp., Mexico, p. 10, *id.* (2) ; *cetratus*, n. sp., Noumea, Koue (New Caledonia), p. 243 ; *id.* (5).

Trachelas madagascariensis, n. sp., Madagascar, p. 232 ; *id.* (4).

Megamyrmeceum velox, n. sp., p. 372, S. Africa ; *id.* (1).

DYSDERIDÆ.

Polyaspis, n. g., near *Gamasomorpha*, *acuminata*, n. sp., Noumea, p. 244 ; SIMON (5).

THERAPHOSIDÆ.

Genysa, n. g., near *Arbanitis*, *bicalcarata*, n. sp., Madagascar, p. 235 ; SIMON (4).

Entomothele, n. g., has for type *M. guyanensis* (Walck.) ; *striatipes*, n. sp., Nossi Bé, p. 236 : *id.* t. c.

Macrothele silvicola, n. sp., New Caledonia, p. 245 ; *id.* (5).

Satzicus, n. g., near *Sarpedon*, p. 286, *andamanicus*, n. sp., Port Blair, p. 287 ; *id.* (7).

Hexathele cinereo-pilosa, n. sp., Valdivia, p. 222 ; *id.* (3).

Mygale splendens and *brunnea* (Nicolet) belong to the genus *Brachythele*, p. 221 ; *rubiginosa* (Nic.) to *Orthotrichus* ; *id.* t. c.

Phrixotrichus, n. n. for *Orthotrichus* (Karsch), preoccupied ; *id.* t. c.

Mygaloides (Nic.), based upon the young of several *Mygalidæ*, cannot be retained, p. 222 ; *id.* t. c.

Fufus, n. g., near *Anama*, p. 212, *atramentarius*, n. sp., Guatemala, p. 213 ; *id.* (2).

Entychides, n. g., near *Cyrttauchenius*, *aurantiacus*, n. sp., Mexico, p. 213 ; *dugesi*, n. sp., Mexico, p. 214 ; *guadalupensis*, n. sp., p. 214 ; *id.* t. c.

Brachythele subcalpetana (Nic.), Chili, p. 221 ; *pissii*, n. sp., Chili, p. 221 ; *id.* (3).

Idiops bonapartei, n. sp., Surinam, p. 166 ; HASSELT.

Barychelus, n. g., near *Idiommatia*, p. 245, *badius*, n. sp., New Caledonia, p. 247 ; SIMON (5).

Encyocrypta, n. g., near *Barychelus*, *meleagris*, n. sp., p. 247, New Caledonia, p. 247 ; *id.* t. c.

Trichopelma, n. g., near *Leptopelma*, *nitida*, n. sp., San Domingo.

p. 215; *illetabilis*, n. sp., Amazona, p. 216; *pentaloris*, n. sp., Vera Paz, p. 216; *id.* (2).

Eurypelma rileyi, n. sp., N. America, MARX (1).

PALÆONTOLOGY.

The following described by GOURRET :—

Attopsis, n. g., *hirsutus*, n. sp., Aix, p. 441, pl. xxiii, fig. 27.

Lycosoides, n. g., *hersiliiformis*, n. sp., Célas, p. 443, pl. xxi, fig. 13.

Protolycosa, n. g., *attiformis*, n. sp., Aix, p. 444, pl. xx, fig. 7.

Amphithomisus, n. g., *barbatus*, n. sp., Aix, p. 447, pl. xxi, fig. 12.

Pseudothomisus, n. g., *articulatus*, n. sp., Aix, p. 449, pl. xxi, figs. 9 & 10.

Cercidiella, n. g., *aquisextana*, n. sp., Aix, p. 452, pl. xxi, fig. 8.

Eresoides, n. g., *orbicularis*, n. sp., Aix, p. 454, pl. xxi, fig. 16.

Ariamnes gabrieli, n. sp., Aix, p. 455, pl. xxiii, fig. 23.

Hersilia aquisextana, n. sp., p. 458, pl. xxi, fig. 14.

Hersilionides thanatiformis, n. sp., Aix, p. 460, pl. xxiii, fig. 24.

Uroctea galloprovincialis, n. sp., Aix, p. 462, pl. xxii, fig. 19.

Amphiclotho, n. g., *breviuscula*, n. sp., Aix, p. 465, pl. xxii, fig. 18.

Protolachesis, n. g., *annulata*, n. sp., Aix, p. 467, pls. xxi, fig. 17, & xxii, figs. 21 & 22.

Tegenaria lacazei, n. sp., Aix, p. 469, pl. xxii, fig. 20.

Clubionella, n. g., *antiqua*, n. sp., Aix, p. 471, pl. xxiii, fig. 25.

Protochersia, n. g., *spinosus*, n. sp., Aix, p. 474, pl. xx, fig. 3.

Prodysdera, n. g., *intermedia*, Aix, p. 477, pl. xx, figs. 4-6 & 14:

Mygale ambigua, n. sp., Aix, p. 480, pl. xxiii, fig. 28.

Eoatypus woodwardii, n. g. & sp., Eocene Tertiary, Garnet Bay, Isle of Wight, p. 200, figs. 1 & 2; McCook (2).

PALPIGRADI.

New ordinal name for genus *Kænenia* (Grassi); THORELL, p. 358.

PEDIPALPI.

PERGANDE, TH. Habits of *Thelyphonus*. P. Ent. Wash. i, pp. 42-44.

MARX, G. On *Thelyphonus*. T. c. p. 42.

—. On the Organisation of *Phrynus*. T. c. p. 47.

Amblypygi.

Charon becarii, n. sp., p. 340, in cave, Amboina; *papuanus*, n. sp., p. 345, New Guinea (Fly River); *subterraneus*, n. sp., p. 349, in cave, Amboina; *sarawakensis*, n. sp., p. 354, Sarawak; THORELL.

Uropygi.

Suborder *Uropygi* contains two tribes :—(1) *Oxopcei*, for *Thelyphonidae*; (2) *Tartarides*, for *Schizonotidae* [*Schizonotus*, new name for *Nyctalopis* (Camb.), nom. preocc.], p. 358; THORELL.

Hypoctonus, n. g., for *Thelyphonus formosus* (Butl.), p. 360; *id.*

Thelyphonus doriae, n. sp., p. 361, Sarawak; *caudatus* (Linn.), syn. *rufipes*, *proscorpio* (C. Koch), p. 370, Java, Batavia; *asperatus*, n. sp., p. 382, Java; *papuanus*, n. sp., p. 385, New Guinea (Ramai); *linganus* (C. Koch), p. 390, Sarawak; *id.*

Tetrabalius, n. g., for *Thelyphonus seticauda* (Dol.), &c., *seticauda* (Dol.), p. 395, Ternate, Amboina; *nasutus*, n. sp., p. 401, Borneo; *id.*

PALEONTOLOGY.

Phrynus marioni, n. sp., Aix, p. 489, pl. xxi, fig. 11; GOURRET.

SCORPIONIDEA.

MARX, G. On the Organisation of the *Scorpionidae*. P. Ent. Wash. i, pp. 108-112, with figs.

SAINT-RÉMY, G. Sur la structure des Centres nerveux chez le Scorpion. Bull. Soc. Nancy, viii, p. xxix.

—. Sur la structure du cerveau chez le Scorpion et la Scolopendre. *Op. cit.* ix, p. xxxi.

MARX (3) gives the following synonymy of Wood's species:—*Buthus biaculeatus* and *B. ezilicauda* are referable to the genus *Centrurus*; *B. californicus* and *carolinianus* = *C. vittatus* (Say); *B. boreus*, *punctipalpis*, and *spiniger* belong to *Vajovis*; *B. emarginaticeps* and *hirsutus* to *Hadrurus*; *B. lesueurii* to *Diplocentrus*; *Centrurus phædodactylus* to *Uroctonus*, and *Scorpio allenii* to *Brotheas*.

Buthus raudus, n. sp., p. 377; *fulvipes*, n. sp., p. 378; *levifrons*, n. sp., p. 379, S. Africa; SIMON (1).

Lepreus lunulifer, n. sp., p. 375, S. Africa; *id. t.c.*

Isometrus maculatus (De Geer), synonyms and remarks on distribution, p. 81; THORELL: recorded from Tavoy, Moulmein, Rangoon, Andamans, Bombay, p. 249, figs. 3 & 4; OATES: *variatus* (Thor.) n. var. *papuanus*, New Guinea, Cape York, p. 83; *flavimanus*, n. sp., Ajer Mancior (Sumatra), p. 85; THORELL: *shoplandi*, n. sp., Palone, Entagaw (Burma), p. 245, fig. 7; *atomarius* (Simon), from Thayetmyo, Tharrawaddy; *varius* (C. Koch), from Tenasserim to Mandalay, p. 247; *phipsoni*, n. sp., Tavoy, Moulmein, Rangoon, Andamans, Bombay, p. 248, figs. 1 & 2; *assamensis*, n. sp., Dhubri (Assam), p. 249, figs. 5 & 6; OATES.

Scorpio (*Pandinus*) *indicus* (Linn.), syn. *afar* (Linn.), ad. partem; *cyaneus*, *reticulatus* (C. Koch), Java, p. 88; *crassimanus* (Becker), = ? *cæsar* (C. Koch), p. 90; THORELL: *carimanus*, n. sp., Kilima-Njaro, Umyamuezi, p. 247; *exitialis*, n. sp., Shoa, p. 249; *dictator*, n. sp., ? syn. *Sc. africanus* (Linn.), Fernando-Po, p. 251; remarks on the distribution of *Sc. roeseli*, p. 253; synoptical table of 6 African species of the genus, p. 254; Pocock (2).

The characters of *maurus* (Linn.) do not appear to be of sufficient importance to justify the separation of that species from the genus of

which *africanus* is the type; therefore *maurus* should be included in the genus *Scorpio*; *spinifer* will then be the type of the genus *Heterometrus*, which will take the place of *Palamnaeus*; *id. t. c.* p. 245.

Petroæcus furcatus, n. sp., S. Africa, p. 380, SIMON (1).

Mossamedes, n. g., allied to *Heterometrus* (type *maurus*), *Micaphonus*, and *Opisthophthalmus*, p. 381, *opinatus*, n. sp., S. Africa, p. 382; *id. t. c.*

Palamnaeus costimanus var. *borneensis* (Thor.), from Sarawak, p. 90; *liophysa*, n. sp., p. 91, Ajer Mancior (Sumatra): THORELL.

Ischnurus tityrus, n. sp., p. 383, S. Africa, SIMON (1).

Hormurus (Thor.), not syn. *Liocheles* (Sund.), p. 95 (in note); *australasiae* (Fabr.), syn. *gracilicauda* (Guér.), *pistaceus* (Simon), p. 95, Ajer Mancior, Sungei, Bulu (Sumatra), Singapore, Tahiti, Upolu, p. 95, var. *complanatus* (C. Koch), syn. *cumingii* (Gerv.), Java, Sarawak, Ternate, Jobi, New Guinea, Cape York, p. 94, *suspectus*, n. var., p. 96, Burma; *insculptus*, n. sp., p. 98, New Guinea; *caudicula* (L. Koch), Aru, p. 102; *wnigiensis* (Gerv.), syn. *karschii* (Keys.), Key I., Ramoi, p. 103; THORELL.

Urodacus novæ-hollandiæ (Peters) recorded from Ceylon, Swan River, and Port Lincoln, differences between the sexes pointed out, pp. 169 & 170, male figured, pl. viii, fig. 1; *excellens*, n. sp., Port Essington, p. 170, pl. viii, fig. 2; *armatus*, n. sp., Port Lincoln, p. 172, pl. viii, fig. 3; *abruptus*, n. sp., Adelaide, p. 174, pl. viii, fig. 4; synopsis of the 4 species of the genus, p. 175; POCOCK (1).

Euscorpius sicanus (C. Koch.)!, Tyrol, p. 349; KULCZYNSKI.

On the form of the pulmonary apertures in *Brotheas*, *Chactus*, and *Teuthraustes*, see KARSCH (1).

SOLPUGIDEA.

Hexisopus fodiens, n. sp., p. 374, pl. vi, figs. 6 & 7, S. Africa, SIMON (1).

Datames magna, Hancock, from Lareda, Texas, figured and described; HANCOCK.

PSEUDOSCORPIONIDEA.

CRONEBERG, A. Beitrag zur Kenntniss des Baues der Pseudoskorpione. Bull. Mosc. 1888, pp. 416–459, 3 pls.

The author concludes that there is no near relationship between the Pseudoscorpions and the Scorpions. The former may perhaps be derived from some group of *Opilionida*.

Olpium characterized; *ramicola*, n. sp., Asuncion, pt. i, No. 1; *elegans*, n. sp., Risso (Paraguay River), No. 2; *crassichelatum*, n. sp., Mato-Grosso, No. 3; *oxydactylum*, n. sp., Risso, pt. ii, No. 13; *brevifemuratum*, n. sp., Risso, pt. ii, No. 14; BALZAN.

Garypus characterized; *cuyabanus*, n. sp., Mato-Grosso, pt. i, No. 4; *id. Boncus* characterized; *chthoniiformis*, n. sp., Resistencia, pt. i, No. 5; *id.*

Chthonius characterized; *hirsutus*, n. sp., Mato-Grosso, pt. i, No. 6; *parvidentatus*, n. sp., Risso, pt. ii, No. 17; *curvidigitatus*, n. sp., Risso, pt. ii, No. 18; *id.*

- Tridenchthonius*, n. g., *parvulus*, n. sp., Risso, pt. i, No. 7; *id.*
Cheiridium characterized; *corticum*, n. sp., Resistencia, pt. ii, No. 1; *id.*
Chelifer characterized; *brevifemoratus*, n. sp., Resistencia, pt. ii, No. 2;
crassimanus, n. sp., Mato-Grosso, pt. ii, No. 3; *viridis*, n. sp., Risso, pt. ii,
 No. 4; *germainii*, n. sp., Mato-Grosso, pt. ii, No. 5; *ezilimanus*, n. sp.,
 Risso, pt. ii, No. 6; *foliosus*, n. sp., Resistencia, Asuncion, pt. ii, No. 7;
segmentidentatus, n. sp., Risso, pt. ii, No. 8; *canestrinii*, n. sp., Resistencia,
 pt. ii, No. 8; *rufus*, n. sp., Asuncion, &c., pt. ii, No. 11; *longichelifer*,
 n. sp., Asuncion, &c., pt. ii, No. 12; *id.*
Ideoroneus, n. g., *pallidus*, n. sp., Risso, pt. ii, No. 16; *id.*
Chernes characterized; *cervus*, n. sp., Mato-Grosso, pt. iii, No. 1;
capreolus, n. sp., Asuncion, Mato-Grosso, &c., pt. iii, No. 2; *communis*,
 n. sp., Resistencia, Asuncion, pt. iii, No. 3; *nidificator*, n. sp., Mato-
 Grosso, pt. iii, No. 4; *robustus*, n. sp., Mato-Grosso, pt. iii, No. 5; *id.*

PHALANGIDEA.

FAUSSEK, V. Ueber die embryonale Entwicklung der Geschlechtsorgane bei der Afterspinne (*Phalangium*). Biol. Centralbl. viii, pp. 359-363. [Abstr., J. R. Micr. Soc. 1888, p. 946.]

Development of the reproductive organs in *Phalangium cornutum*.

HENKING, H. Biologische Beobachtungen an Phalangiden. Zool. Jahrb. iii, pp. 319-335.

SAINT-RÉMY, G. Recherches sur le cerveau des Phalangides. C.R. cvi, pp. 1429-1431.

A description of the structure of the brain in *Ph. opilio* and *Ph. parietinum*, with a comparison between this organ as presented in the *Arachnida*, *Crustacea*, and *Insecta*.

Platybunus armatus, n. sp., Tyrol, p. 346; KULCZYNSKI.

Opilio paraguayensis, n. sp., Paraguay, p. 105, pl. ix, fig. 6; CANESTRINI (2).

Pacilima flavum (Perty), Paraguay, p. 106, pl. ix, fig. 2; *id. t. c.*

Pachylus gracilipes, n. sp., Resistencia, p. 107, pl. ix, fig. 4; *spinosus*, n. sp., Paraguay, p. 108, pl. ix, fig. 1; *id. t. c.*

Geræocormobius, n. g., *silvarum*, n. sp., Santa Ana; HOLMBERG, Bol. Ac. Arg. x, p. 211, fig.

PALÆONTOLOGY.

Amphitrogulus, n. g., *sternalis*, n. sp., Aix, p. 484, pl. xxiii, fig. 26; GOURRET.

Phalangillum, n. g., *hirsutum*, n. sp., Aix, p. 487, pl. xxi, fig. 15; *id.*

ACARIDEA.

AURIVILLIUS, C. W. S. En fästing såsom endoparasit (*Ixodes*). Ent. Tidskr. vii, pp. 105-111. [Résumé, *ibid.* p. 139-141.]

GILSON, C. The Spermatogenesis of the Acarians, and the Laws of Spermatogenesis in general. Rep. Brit. Ass. 57, pp. 758 & 759.

*— Étude comparé de la Spermatogénèse chez les Arthropodes-Acariens. Cellule, iv, pp. 1-93 (cf. Zool. Anz. xi, p. 468).

*DAMMER, U. Ueber die Beziehungen der Milben zu der Pflanzen. Humboldt (Dammer) vii, pp. 137 & 138 (cf. Zool. Anz. xi, p. 468).

KRAMER, R. Ueber Milben. Z. Naturw. 1888, p. 646.

LOEW, F. Norwegische Phytopto- und Entomo-ecidien. Verh. z.-b. Wien, xxxviii, pp. 537-548.

NALEPA, A. Die Anatomie der Phytopten. SB. Ak. Wien, xcvi, pp. 115-165.

QUILTER, H. E. Note on a Parasitic Mite of *Testacella scutulum*. J. Conch. v, p. 314.

SCHAUB, R. VON. Ueber die anatomie von *Hydrodroma*. Ein Beitrag zur Kenntnis der Hydrachniden. SB. Ak. Wien, xcvii, pp. 98-151.

Cuticle, mouth-parts, tracheæ, nervous, alimentary, and generative systems described fully in a species of *Hydrodroma*.

SCHLECHTENDAL, D. VON. Ueber *Zooecidium*. Beiträge zur Kenntnis der Acaroecidien. Z. Naturw. lxi, pp. 93-113.

STEFANI, T. D. Sopra una galla di *Phytoptus* sul *Vitis agnus-castus*. Nat. Sicil. viii, pp. 66-69.

WESTHOFF, F. Ueber die überwinterung der Gallmilben. J. Ber. westf. Ver. p. 31.

WINKLER, W. Die Anatomie der Gamasiden. Arb. z. Inst. Wien, vii, pp. 317-354, 1 pl.

The author treats principally of the anatomy of *Gamasus* and *Uropoda*. He describes the mouth-parts and their innervation, the heart, alimentary canal, excretory and reproductive organs.

ORIBATIDÆ.

MICHAEL describes and figures the following, from various parts of Britain :—

Tegeocranus, synopsis of British species, p. 337; *dentatus*, n. sp., on decayed trees, pl. xxvi, figs. 1-7 & 9, p. 338; *cephiformis* (Nic.), fir-trees, pl. xxv, figs. 1-7, p. 340; *hericius*, n. sp., on oak trees, pla. xxv, figs. 8-13, & xxvi, fig. 10, p. 346.

Notaspis characterized, p. 349; synopsis of British species, pp. 354 & 355, *bifilis* (Herm.), syn. *cornuta*, ? *badia*, *acuminata* (Koch), in moss, pl. xxvii, p. 356; *exilis* (Nic.), in moss, pl. xxviii, figs. 1-5, p. 359; *tibialis* (Nic.), in moss, pl. xxviii, figs. 6-8, p. 362; *similis*, n. sp., in moss, pl. xxxi, figs. 9-12, p. 363; *juncta* (Mich.), in moss, pl. xxviii, figs. 9-12, p. 365; *serrata* (Mich.), in lichen, pl. xxix, figs. 1-10, p. 366; *pilosa* (Koch), syn. *pilosula* (Koch), pl. xxix, figs. 11-16, p. 370; *lucorum* (Koch), in lichen,

pl. xxx, figs. 1-5, p. 371; *oblonga* (Koch), syn. *obsoleta* (Koch), common, pl. xxx, figs. 6-11, p. 374; *licnophora* (Mich.), decayed wood, pl. xxxi, figs. 6-8, p. 379; *monilipes* (Mich.), dead wood, pl. xxxi, figs. 1-5, p. 381; *quadricanita* (Mich.), in moss, pl. xxxi, figs. 13-15, p. 385; *clavipectinata* (Mich.), in thatch, pl. xxxii, figs. 7-11, p. 387; *pectinata* (Mich.), in moles' nests, pl. xxxii, figs. 1-6, p. 389; *longilamellata* (Mich.), pl. xxviii, figs. 13-15, p. 392; *splendens* (Koch), in moss, pl. xxxiii, figs. 10-15, p. 393; *trigona*, n. sp., pl. xxviii, fig. 16, p. 396; *lacustris* (Mich.), water-weeds, pls. xxxiii, figs. 1-9, & xxx, fig. 12, p. 399.

Damceus characterized, p. 404; synopsis of British species, p. 408; *nitens* (Koch), decaying wood, pl. xxxiv, figs. 1-8, p. 409; *verticillipes* (Nic.), syn. *pollinosus* (Koch), common, pl. xxxvii, p. 412; *sufflexus* (Mich.), in moss, pl. xxxiv, figs. 9 & 10, p. 415; *tecticola*, n. sp., in thatch, pl. xxxv, p. 416; *tenuipes* (Mich.), in thatch, pl. xxxvi, p. 420; *clacipes* (Herm.), syn. *nodipes*, *concolor*, *glaucina* (Koch), *auritus* (Nic.), *geniculata* (Can.), in moss, pls. xxxviii D, figs. 6 & 7, E, fig. 5, & G, fig. 12, p. 423; *geniculatus* (Linn.), syn. *torrus* (Koch), moss, under stones, &c., pls. xxxix D, figs. 8, 9, 10, & 17, E, figs. 4, 12, 17, F, figs. 1, 6, 7, & 10, & G, figs. 1 & 5, p. 428; *auritus* (Koch), syn. *riparius* (Nic.), common, pl. xl, p. 435.

Hermannia characterized, p. 439; synopsis of species, p. 444; *arrecta* (Nic.), dead wood, pls. xliii, figs. 8-15, E, fig. 1, & F, fig. 15, p. 445; *piceus* (Koch), syn. *convexus* (Koch), *crassipes* (Nic.), in moss, pls. xli, figs. 1-9, & F, fig. 16, p. 448; *nodosa*, n. sp., in moss and water-weeds, pl. xli, figs. 10 & 11, p. 452; *nanus* (Nic.), in moss, pl. xliii, figs. 1-7, p. 455; *reticulata* (Thor.), in moss, lichen, pl. xlii, figs. 1-7, p. 458; *bistriata* (Nic.), syn. *palliata* (Koch), *cirrosus* (Can. & Fanz.) pl. xlii, figs. 8-14, p. 462.

Eremaeus characterized, p. 466; synopsis of species, p. 470; *cymba* (Nic.), on oak trees, pl. xlv, figs. 1-11, p. 470; *brevipes*, n. sp., in foliage, pl. xlv, figs. 12-19, p. 475.

Nothrus characterized, p. 479; synopsis of species, p. 487; *targionii* (Berl.), in mole's nest, pl. xlvii A, fig. 11, p. 488; *sylvestris* (Nic.), syn. *anauniensis* (Can. & Fanz.), *biciliatus* (Berl.), wide spread, pl. xlv, figs. 1-7, p. 490; *palustris* (Koch), syn. *pallens* (Koch), in moss, pl. xlv, figs. 8-13, p. 494; *spiniger* (Koch), wide spread, pl. xlviii, figs. 7-13, p. 497; *invenustus*, n. sp., in lichen, pls. xlvii, fig. 6, & A, fig. 12, p. 500; *horridus* (Herm.), syn. *mutilus*, ? *bistriatus*, *sinuatus*, *runcinatus* (Koch), ? *angulatus* (Berl.), in moss, &c., pl. xlvii, figs. 1-4 & 7-13, p. 503; *biverrucatus* (Koch), syn. *angulatus* (Koch), *horridus* (Berl. & Nic.), wide spread, pl. xlvii A, figs. 6-10, p. 510; *bicarinatus* (Koch), syn. *ventricosus*, *rostratus* (Koch), in early foliage, pl. xlvii A, figs. 1-5, p. 514; *segnis* (Herm.), syn. *furcatus*, *biurus* (Koch), in moss, pl. xlviii, figs. 1-6; *theleproctus* (Herm.), syn. *furinosus* (Koch), *doderleinii* (Berl.), *circumvallatus* (Haupt.), pl. xlv, figs. 1-9, &c.; *glaber*, n. sp., water-weeds, p. 425; *turdus*, n. sp., on lichen, pl. xlvii, fig. 14, p. 526; *monodactylus*, n. sp., in moss, pl. xlv, figs. 10-14, p. 528.

Hypochthonius characterized, p. 530; synopsis of species, p. 534; *rufulus* (Koch), syn. *ovata* (Nic.), in moss, pl. xlix, figs. 6-13, p. 534; *pallidulus* (Koch), in mosses, pl. xlix, figs. 1-5, p. 537; *brevis*, n. sp., in sphagnum.

pl. xlix, fig. 14, p. 537; *lanatus* (Mich.), in thatch, pl. xlix, figs. 15-22, p. 541.

Hoplophora characterized, p. 543; synopsis of species, p. 555; *magna* (Nic.), in wood, pls. 1, figs. 1-7, & li, figs. 1-4, p. 556; *anomala* (Berl.), in moss, pl. li, figs. 5 & 6, p. 558; *dasyptus* (Dug.), syn. *contractilis* (Perty), *decumana*, *lucida*, *lentula* (Koch), in wood and moss, pl. 1, figs. 8-14, p. 560; *stricula* (Koch), in mole's nest, pl. li, fig. 7, p. 563; *ardua* (Koch), in dead wood, pl. li, figs. 8-15, p. 564.

Scutovertex, synopsis of species, p. 567; *corrugatus*, n. sp., on water-weeds, pl. figs. 1-7, p. 367; *bilineatus*, on water weeds, pl. liv, figs. 8-16, p. 571.

Pelops phænotus, nymph, pl. lii, fig. 1, p. 574.

Oribata edwardsii, nymph, pl. liii, fig. 1, p. 575.

Cepheus bifidatus, nymph, pl. lii, figs. 2 & 3, p. 576.

Notes upon certain species described in vol. i, pp. 578-582.

Notes on classification, pp. 583-593; on anatomy, pp. 594-603; on metamorphosis, pp. 604-608; list of foreign species, pp. 610-618.

CANESTRINI (1) describes, from Italy:—

Tarsonemus characterized, p. 313; *floricolus* (Can. & Fan.), Trentino, Padova, p. 315; *minusculus* (Can. & Fan.), Trentino, p. 316; *kirchneri* (Kr.), p. 317; *buxi* (Can. & Berl.), Padova, p. 318; *oryzæ* (Targ.), p. 321.

Pediculoides characterized, p. 314; *ventricosus* (Newp.), p. 322; *fimiculus*, n. sp., Padova, p. 323.

Pigmephorus, p. 314; *spinus* (Kr.), p. 324; *mesembrinae* (R. Can.), p. 326.

Disparipes, p. 314, *bombi* (Mich.), Veneto, p. 328; *ezhamulatus* (Mich.), in moss, p. 329; *nudus* (Berl.), p. 331.

On the metamorphosis of *Pterodectes bilobatus* and of *Freyana anatina*, pp. 333-349.

BERLESE (1), from Italy, describes:—

Cepheus latus (Nic.), in moss, pt. xlix, No. 5.

Carabodes elongatus (Mich.), in moss, pt. 1, No. 1.

Zetorchestes, n. g., for *Leptorchestes*, preoccupied, *micronychus* (Berl.), in moss, pt. xlix, No. 7.

Leiosoma pyrigerum, n. sp., in moss, pt. 1, No. 2.

BERLESE (2) records, from S. America:—

Oribates peloptoides, n. sp., Rio-Apa, p. 215, pl. xiii, fig. 3.

Cepheus variolosus, n. sp., Mato-Grosso, p. 216, pl. xiii, fig. 4.

Nothrus flagellatus, n. sp., Rio-Apa, p. 216, pl. xiii, fig. 4.

Neoliodes theleproctus (Herm.) n. var. *porcellus*, Rio-Apa, p. 217.

Eremaeus carinulatus, n. sp., Mato-Grosso, p. 217, pl. xiii, fig. 2.

Damaeus ornatissimus, n. sp., Mato-Grosso, p. 217, pl. xiii, fig. 1.

Hoplophora variolosa, n. sp., Mato-Grosso, p. 218, pl. xiii, fig. 6.

Podapolipus, n. g., *reconditus*, n. sp., p. 59, pl. xv; ROVELLI & GRASSI.

GAMASIDÆ.

Gamasus aberrans, n. sp., Mato-Grosso, p. 194, pl. viii, fig. 5; BERLESE (2).

- Gamasus fortis*, n. sp., Rio Janeiro, p. 101, pl. x, fig. 5 ; CANESTRINI (2).
Gamasus giardi, n. sp., on *Balanus balanoides*, p. 753 ; TROUSSERT.
Holostaspis cordiger, n. sp., Rio-Apa, p. 195, pl. viii, fig. 4 ; BERLESE (2).
Pachylaelaps, n. g., pt. li, No. 10, *id.* (1) ; *heros*, n. sp., Mato-Grosso, p. 196, pl. viii, fig. 2 ; *athleticus*, n. sp., Asuncion, p. 197, pl. viii, fig. 3 ; *id.* (2).
Laelaps glabratus, n. sp., Rio-Apa, p. 198, pl. ix, fig. 4 ; *id.* t. c.
Hypoaspis coleoptratus, n. sp., Buenos Ayres, p. 198, pl. ix, fig. 5 ; *id.* t. c.
Hypoaspis coffea, n. sp., Rio Janeiro, p. 102, pl. x, fig. 4 ; *id.* t. c.
Celenopsis, remarks on ; *ovata*, n. sp., Asuncion, p. 199, pl. x, fig. 1 ; *subincisa*, n. sp., Buenos Ayres, p. 200, pl. x, fig. 2 ; *lunulata*, n. sp., Paraguay, Brazil, p. 201, pl. x, fig. 3 ; *ambigua*, n. sp., Rio-Apa, p. 202, pl. xi, fig. 5 ; *id.* t. c.
Euzercon, n. g., near *Celenopsis*, *balsani*, n. sp., Rio-Apa, p. 203, pl. ix, fig. 2 ; *id.* t. c.
Antennophorus caput-carabi, n. sp., Mato-Grosso, p. 205, pl. xi, fig. 2 ; *viduus*, n. sp., Rio-Apa, p. 206, pl. xi, fig. 3 ; *id.* t. c.
Diplogynium, n. g., *acuminatum*, n. sp., Rio Janeiro, p. 101, pl. x, fig. 1 ; *id.* t. c.
Heterozercon, n. g., p. 206, *degeneratus*, n. sp., Mato-Grosso, p. 207, pl. xi, fig. 1 ; *id.* t. c.
Podolaelaps, n. g., near *Laelaps*, p. 207, *ambulacrus*, n. sp., Mato-Grosso, p. 208, pl. ix, fig. 3 ; *id.* t. c.
Leiognathus bursa, n. sp., Buenos Ayres, p. 208, pl. ix, fig. 6 ; *id.* t. c.
Uropoda carinata, n. sp., in moss, pt. l, No. 9 ; *id.* (1).
Uropoda festiva, n. sp., Rio-Apa, p. 209, pl. xii, fig. 7 ; *longiseta*, n. sp., Rio-Apa, p. 209, pl. xii, fig. 4 ; *hypopoides*, n. sp., Rio-Apa, p. 210, pl. xii, fig. 9 ; *pusilla*, n. sp., Rio-Apa, p. 210, pl. xii, fig. 3 ; *elimata*, n. sp., Mato-Grosso, p. 211 ; *vulpina*, n. sp., Rio-Apa, p. 211, pl. xii, fig. 1 ; *cribraria*, n. sp., Asuncion, p. 212, pl. xii, fig. 8 ; *id.* (2).
Uropoda clavipilis, n. sp., Rio Janeiro, p. 103, pl. x, fig. 3 ; *bifilis*, n. sp., Rio Janeiro, p. 104, pl. x, fig. 2 ; CANESTRINI (2).
Discopoma modesta, n. sp., Rio-Apa, p. 212, pl. xii, fig. 5 ; BERLESE (2).
Celano truncata, n. sp., Mato-Grosso, p. 213, pl. xii, fig. 4 ; *id.* t. c.
Uropodella, n. g., p. 214, *laciniata*, n. sp., Buenos Ayres, Rio-Apa, p. 214, pls. xii, fig. 6, & xiii, fig. 10 ; *id.* t. c.
Dinychus inermis (Koch), on dunghills, pt. li, No. 8 ; *id.* (1).
Dinychella asperata, n. sp., pt. li, No. 9 ; *id.* t. c.
Urosejus, n. g., pt. xlix, No. 8 ; *acuminatus* (Koch), pt. xlix, Nos. 3 & 4 ; *id.* t. c.

TYROGLYPHIDÆ.

Family characterized, p. 351 ; synopsis of genera, p. 354 ; CANESTRINI (1).

Histiostoma, p. 354, *muscarum* (Schr.), p. 368, pl. xxxiv, fig. 2 ; *ulorum* (Koch), in putrefying substances, p. 730, pls. xxiv, fig. 1, & xxxi, fig. 1 ; *pyllotrichum* (Berl.), Padova, in rubbish, p. 372 ; *finetorum* (Can. & Berl.),

p. 373, pl. xxiv, fig. 2; *feroniarum* (Duf.), in rotting vegetable matter, p. 375; *id. t. c.*

Homopus, p. 354, *sciurinus* (Koch), p. 377; *talpæ* (Kr.), on the mole, p. 379, pl. xxxv, fig. 3; *id. t. c.*

Glyciphagus, p. 355, *spinipes* (Koch), decomposing animal matter, p. 381, pl. xxvii, fig. 1; *domesticus* (De Geer), p. 384; *ornatus* (Kram.), in moss, p. 385; *intermedius* (Can.), p. 386, pl. xxii, fig. 2; *plumiger* (Koch), in rubbish, p. 388, pl. xxviii, fig. 1; *canestrini* (Arm.), in rubbish, p. 389, pl. xxix, fig. 1; *palmifer* (F. & R.), in rubbish, p. 390, pl. xxvi, fig. 1; *id. t. c.*

Glyciphagus palmifer (F. & R.), in dung, pt. li, No. 2; BERLESE (1).

Phycobius, p. 355, *anonymus* (Hall.), rotting substances, p. 392, pl. xxxv, fig. 1; CANESTRINI (1).

Trichotarsus, p. 356, *xylocopæ* (Donn.), on nest of *Xylocopa violacea*; p. 394, pl. xxxvi, figs. 1-6; *osmiæ* (Duf.), p. 395; *id. t. c.*

Histiogaster, p. 356, *carpio* (Kram.), in rotten fungi, p. 395, pl. xxxv, fig. 2; *corticalis* (Mich.), on bark, p. 397; *id. t. c.*

Chortoglyphus, p. 356, *nudus* (Berl.), in hay, p. 398, pl. xxxiv, fig. 4; *id. t. c.*

Aleurobius, p. 357, *farinæ* (De Geer), in flour, p. 399, pl. xxx, fig. 1; *id. t. c.*

Tyroglyphus, p. 357, *siro* (Linn.), decomposing organic matter, p. 402, pl. xxxi, fig. 2; *longior* (Gerv.), p. 405, pl. xxxii, fig. 1; *agilis* (Can.), p. 408, pl. xxxiii, fig. 2; *krameri* (Berl.), p. 410, pl. xxxiv, fig. 1; *siculus* (F. & R.), p. 412; *minutus* (Targ.), p. 413; *id. t. c.*

Tyroglyphus krameri (Berl.), pt. xlix, No. 10; BERLESE (1).

Rhizoglyphus, p. 357, *spinitarsus* (Herm.), p. 413, pls. xxv, fig. 1, & xxxiii, fig. 1; CANESTRINI (1).

TROMBIDIIDÆ.

Trombidium gymnopteroorum (Linn.), n. var. *brevitarsum*, Mato-Grosso, Buenos Ayres, p. 177; *perligerum*, n. sp., Asuncion, p. 177, pl. v, fig. 3; *modestum*, n. sp., Mato-Grosso, p. 178, pl. v, fig. 2; *coarctatum*, n. sp., Buenos Ayres, p. 179, pl. v, fig. 5; *ophthalmicum*, n. sp., Rio-Apa, p. 179, pl. v, fig. 4; BERLESE (2).

Trombidium americanum, n. sp., Rio Janeiro, p. 100, pl. x, fig. 6; CANESTRINI (2).

Trombella nothroides, n. sp., Mato-Grosso, p. 180, pls. vi, fig. 2, & vii, figs. 6 & 7; BERLESE (2).

Bryobia (Koch) characterized, pt. 1, No. 10; *speciosa* (Koch), on plants, pt. li, No. i; *id.* (1).

Rhyncholophus filipes, n. sp., Mato-Grosso, p. 181, pl. vii, fig. 2; *impectus*, n. sp., Asuncion, Buenos Ayres, p. 182, pl. vii, fig. 1; *gloriosus*, n. sp., Asuncion, Buenos Ayres, p. 183, pl. v, fig. 1; *pedestris*, n. sp., Buenos Ayres, p. 183, pl. viii, fig. 1; *calvescens*, n. sp., Paraguay, Brazil, p. 184, pl. vi, fig. 3; *id.* (2).

Rhyncholophus rubripes, n. sp., on *Balanus balanoides*, p. 754; TROUESART (3).

Smaridia depilata, n. sp., Mato-Grosso, p. 185, pl. vi, fig. 4; BERLESE (2).

Raphignathus curtispilis, n. sp., in moss, pt. I, No. 4; *id.* (1).

Ceculisoma, n. g., near *Rhyncholophus*; *tuberculatum*, n. sp., Buenos Ayres, Asuncion, p. 186, pl. vi, fig. 1; *id.* (2).

Scirus taurus (Kram.), in moss, pt. xviii, No. 10, *id.* (1); n. var. *bison*, Mato-Grosso, p. 188, pl. vii, fig. 4; *curtispilis*, n. sp., Buenos Ayres, p. 188, pl. vii, fig. 5; *id.* (2).

Pseudocheylus, n. g., *biscalatus*, n. sp., Rio Apa, p. 189, pl. vii, fig. 3; *id. t. c.*

Eupalus sanguineus, n. sp., on *Balanus balanoides*, p. 753; TROUESSART (3).

IXODIDÆ.

Amblyomma complanatum, n. sp., Rio-Apa, p. 191, pl. xiii, fig. 7; *auro-nitens*, n. sp., Rio-Apa, p. 192, pl. xiii, fig. 9; *sculptum*, n. sp., Mato-Grosso, p. 192, pl. xiii, fig. 8; BERLESE (2).

Izodes reduvius (Charl.), on cattle, dogs, &c., pt. xlix, No. 6; *id.* (1).

Hæmaphysalis micropla, n. sp., Paraguay, p. 104, pl. ix, fig. 3; CANESTRINI (2).

Hæmaphysalis marmorata, n. sp., pt. xlvii, No. 4; BERLESE (1).

Ripicephalus sanguineus (Latr.), on fox, pt. xlvii, No. 1; *id. t. c.*

Argas reflexus (Fabr.), on pigeons, pt. xlvii, No. 5; *id. t. c.*

Hyalomma marginatum (Koch), syn. *dentatum* (Can. & Fan.), on wild boar, pt. xlvii, Nos. 2 & 3; *id. t. c.*

Gonizodes, n. subg., *rostralis*, n. sp., Guanajuato, p. 129; DUGÈS.

SARCOPTIDÆ.

TROUESSART (1) describes the following :—

Freyana tarandus, n. sp., on *Ibis*, p. 333, pl. xxii, figs. 1 & 2; *oblonga*, n. sp., on *Ibis hagedash*, p. 334; *marginata* n. var. *grandiloba*, on *Rhynchops atra*, p. 335, pl. xxii, figs. 3 & 4; *manicata* n. var. *major*, on *Daption capensis*, p. 336.

Pterolichus grandis, n. sp., on *Hydroch. fissipes*, p. 337; *simplex* n. var. *tyroglyphinus*, on *Hy. leucoptera*, p. 337; *anomulus*, n. sp., on *Ibis carunculata*, p. 338; *corystes*, n. sp., on *Graculus carunculatus*, p. 338; *coccyger*, n. sp., on *Aramus scolopaceus*, p. 339; *corniger*, n. sp., on *Psophia agami*, p. 339, pl. xxii, fig. 5; *navicula*, n. sp., on *Megapodius*, p. 340.

Pseudalloptes curtus (Trt.), on *Megapodius*, p. 341; *quadratus* (Trt.), on *Megapodius*, p. 341; *thoracosuthes*, n. sp., on *Megapodius*, p. 342, pl. xxii, figs. 6 & 7; *forficula*, n. sp., on *Ortallidia squamata*, p. 343.

Syringobia, n. g., *chelopus*, n. sp., on *Totanus calidris*, p. 344; *tricalcaratus*, n. sp., on *Charadrius philippinus*, p. 345.

Paralges deformis, n. sp., on *Schizorhis concolor*, p. 346.

Xoloptes minor, n. sp., on *Ortallidia squamata*, p. 347; *forcipatus*, n. sp., on *Nothocercus sallæi*, p. 348, pl. xxiii, fig. 4.

Neumannia, n. g., p. 348. *chelifer*, n. sp., on *Nothocercus sallæi*, p. 349, pl. xxiii, figs. 5 & 6.

Anasicudion, n. g., p. 349, *landoisi* (Buchh.), on *Buceros rhinoceros*, p. 350, pl. xxiv, figs. 10 & 11.

Dermoglyphus vermicularis, n. sp., on *Elænea martinica*, p. 351, pl. xxiii, fig. 3.

Pteronysus integer, n. sp., on *Muscicapa griseola* and *Parus cristatus*, p. 352, pl. xxiv, fig. 5; *gracilipes*, n. sp., on *Totanus calidris*, p. 353; *acris*, n. sp., on *Megapodius laperousei*, p. 354.

Mesalges, n. subg., p. 354, *abbreviatus* (Buchh.), on *Buceros*, p. 355; *lyrurus*, n. sp., on *Buceros*, p. 355; *elephantopus*, n. sp., on *Buceros*, p. 356, pl. xxiii, fig. 7; *lyriodes*, n. sp., on *Dendrochelidon mystaceus*, p. 357; *spinus*, n. sp., on *Buceros plicatus*, p. 357, pl. xxiii, figs. 8 & 9; *trucaticeps*, n. sp., on *Buceros rhinoceros*, p. 358.

Megninia effeminata, n. sp., on *Mellirhophates leucostephus*, p. 359, pl. xxiv, figs. 1-3; *pappus*, n. sp., on *Manucodia atra*, p. 359, pl. xxiv, fig. 4.

Analges hoplophorus, n. sp., on *Gracula robusta*, p. 360.

Protalges longitarsus, n. sp., on *Pekazophora iolata*, p. 361, pl. xxiv, fig. 7.

Analloptes psophia, n. sp., on *Psophia agami*, p. 361; *pallens*, n. sp., on *Porzana bailloni*, p. 362, pl. xxiv, fig. 6.

Xotalges described, p. 362; *analginus* (Trt.), on *Toucans*, p. 364; *astacopodus*, n. sp., on *Chibia carbonaria*, p. 364; *spinus*, n. sp., on *Todopsis cyanocephala*, p. 365.

Allanalges bifolius, n. sp., on *Megapodius freycineti*, p. 366, pl. xxv, fig. 1.

Pterocolus rotifer, n. sp., on *Mellirhophates leucostephus*, p. 366, pl. xxv, figs. 2 & 3.

Alloptes corymbophorus, n. sp., on *Ibis strictipennis*, p. 367, pl. xxv, fig. 4; *syringophorus*, n. sp., on *Manucodia atra*, p. 368; *lonchophorus*, n. sp., on *Mellirhophates leucostephus*, p. 369; *flaggellicaulus*, n. sp., on *Scolopax gallinago*, p. 369.

Pterodectes intermedius, n. sp., on *Elænea martinica*, p. 369, pl. xxv, fig. 10; *securidatus*, n. sp., on *Mellirhophates leucostephus*, p. 370; *reticulifer*, n. sp., on *Otocorys cornuta*, p. 371, pl. xxv, figs. 6 & 7; *pennifer*, n. sp., on *Notodela leucura*, p. 371, pl. xxv, figs. 6 & 7.

Criniscansor, n. g., *criceti*, n. sp., p. 234, pl. ii, figs. 1-3; POPPE.

Cheyletus nörneri, n. sp., on *Sterna hirundo*, p. 239, pl. ii, figs. 4 & 5; *id. t. c.*

Symbiotes avus (Tr.), on *Passer*, p. 134, fig. 1; TROUESSART (2).

Heteropsorus, n. g., *pteroptopus*, n. sp., on *Emberiza*, p. 137, pl. ii, fig. 1; *id. t. c.*

Epidermoptes uncinatus (Rob. & Megn.), on *Vidua paradisæa*, p. 141; *bilobatus* (Riv.), on fowls, p. 141; *bifurcatus* (Riv.), on fowls, p. 141; *dermicola*, n. var., on *Passer*, p. 144, pl. ii, figs. 4 & 5; *cephalotes*, n. sp., on *Eulampis holosericeus*, p. 145, pl. iii, figs. 1 & 2; *bihamatus*, n. sp., on *Porzana bailloni*, p. 147, pl. iii, figs. 3 & 4; *id. t. c.*

Pterolichus ciconiæ (Can. & Berl.), on *Ciconia alba*, pt. xlix, No. 9; *cultrifer* (Rob. & Megn.), on *Cypselus apus*, pt. l, No. 6; *obtus* (Rob. & Megn.), n. var. *curtus*, on *Coturnix saxatilis*, No. 7; BERLESE (1).

Alloptes crassipes (Can.), on plovers, &c., pt. l, No. 5; *id. t. c.*

Myocoptes musculus (Koch), on mice, pt. xlviii, No. 9; *id. t. c.*

HYDRACHNIDÆ.

Arrhenurus abbreviator, n. sp., Patavino, pt. li, No. 3; *malleator*, n. sp., in ditches, Patavino, No. 4; *buccinator* (Müll.), Patavino, No. 5; BERLESE (1): *affinis*, n. sp., Karrasch-See, KOENIKE (1).

Nescea furcata (Herm.), Veneto, pt. li, No. 6; BERLESE (1); *uncata*, n. sp.; KOENIKE (2).

Piona rufa (Koch), in ditches, Veneto, No. 7; BERLESE (1).

Eylais extendens (Müll.), n. var. *protendens*, Buenos Ayres, p. 219; *id.* (2).

Hydrachna globosa (de Geer) n. var. *miliaria*, p. 219; *id. t. c.*

Nautarachna asperrima, n. g. & sp., p. 64; MONIEZ.

HALACARIDÆ.

Halacarus ctenopus (Gosse), on *Lascea rubra*, p. 754; *inermis*, n. sp., on *Thuiaria thuiæ*, p. 754; TROUESSART (3).

Rhombognathus, n. g., with *Pachygnathus notops* (Gosse), as type; *longirostris*, n. sp., on *Lascea rubra*, p. 754; *id. t. c.*

Copidognathus, n. g., p. 754, *glyptoderma*, n. sp., p. 755; *id. t. c.*

Leptopsalis, n. g., *longipes*, n. sp., p. 755; *id. t. c.*

Aletes, n. g., *pascens*, n. sp., p. 54, pl. ii, figs. 64 & 69; *setosus*, n. sp., p. 58, figs. 79 & 80; LOHMANN.

Halacarus murrayi, n. sp., p. 70, pl. ii, figs. 83 & 86; *floridearum*, n. sp., p. 72, pl. iii, figs. 111 & 115; *balticus*, n. sp., p. 73, pl. iii, figs. 108 & 120; *striatus*, n. sp., p. 74, fig. 117; *spinipes*, n. sp., p. 75, pl. iii, figs. 101 & 102; *fabricii*, n. sp., p. 79, pl. ii, figs. 81 & 82; *loricatus*, n. sp., p. 81; *id.*

Leptognathus marinus, n. sp., p. 88, pl. iii, figs. 121 & 122; *id.*

Agane, n. g., for *Hal. parvus* (Chilton); *id.*

PALÆONTOLOGY.

Megameropsis, n. g., of *Trombidiidæ*, *aquensis*, n. sp., Aix, p. 435, pl. xx, fig. 1; GOURRET.

Pseudopachygnathus, n. g., of *Trombidiidæ*, *maculatus*, n. sp., Aix, p. 437, pl. xx, fig. 2; *id.*

PYCNOGONIDA.

SCHIMKEWITSCH, W. M. Ueber die von Prof. Chierchia während der Erdumseglung des Vettor Pisani gesammelten Pantopoden. Trav. Soc. Nat. St. Petersburg. Sect. Zool. xix, pp. 94-96 (printed in Russian).

SARS, G. O. *Pycnogonida borealia et arctica*. Arch. f. math. og Naturv. xii, pp. 339-356.

Pycnogonum crassirostre, n. sp., Norway, p. 340.

Anoploductylus typhlops, n. sp., Norway, p. 341.

Pallene producta, n. sp., Norway, p. 342.

Cordylochele, n. g., p. 343, type *Pallene malleolata* (Sars); *longicollis*, n. sp., Lofoten Is., p. 344; *brevicollis*, n. sp., Vadsø, p. 345.

Nymphon microrhynchum, n. sp., p. 347; *leptocheles*, n. sp., Norway, p. 348; *micronyx*, n. sp., Matotschincharr, p. 350; *longimanum*, n. sp., p. 351.

Chatonymphon, n. g., for *Nymphon hirtum* (Fabr.); *hirtipes* (Bell), *spinosum* (Goodsir); *tenellum*, n. sp., Finmark, p. 353.

Boreonymphon, n. g., for *Nymphon robustum* (Bell), p. 354.

TARDIGRADA.

PLATE, LUDWIG, H. Beiträge zur Naturgeschichte der Tardigraden. Zool. Jahrb. iii, pp. 487-550, pls. xx-xxii.

The first part of the paper treats of the anatomy and histology of the group; the blood, alimentary, generative, excretory, muscular, and nervous systems being discussed separately.

Part III deals with classification:—

Table of genera, pp. 528 & 529.

Echiniscus (C. Sch.), = *Emydium* (Doy.), p. 529; table of species, p. 530; *bellermanni* (Sch.), *creplini* (Sch.), *spinulosus* (Doy.), *victor* (Chr.), *granulatus* (Doy.), p. 531, *filamentosus*, n. sp., *testudo* (Doy.), *muscicola*, n. sp., *aculeatus*, n. sp., *actomys* (Sch.), *biunguis* (Sch.), p. 532, *similis*, n. sp., p. 533; n. subg. *Echiniscoides*, for *sigismundi* (Sch.), p. 533.

Lydella (Duj.), p. 533; *dujardini*, p. 533.

Macrobiotus, p. 533; table of species, p. 534; *oberhäuseri* (Doy.), *intermedius*, n. sp., *hufelandii* (Sch.), p. 535, *tetradactylus* (Grf.), *macrotyx* (Duj.), *schultzei* (Greef), *tuberculatus*, n. sp., p. 536.

Doyeria, n. g.; *simplex*, n. sp., p. 537.

Diphascon, n. g., p. 537; *chilenense*, n. sp., p. 538.

Milnesium, p. 538; *tardigradum* (Doy.), *alpigenum* (Shr.), p. 538.

The last part of the paper deals with the question as to the position to be assigned to this group in the animal kingdom.

GIGANTOSTRACA.

CLARKE, J. M. The Structure and Development of the Visual Area in the Trilobite, *Phacops rana*. Journ. Morph. ii, 1888, pp. 253-270.

FOERSTE, A. E. Notes on Palæozoic Fossils. Bull. Denison Univ. iii, pp. 117-137.

Lichas halli, n. sp., p. 118, pl. xiii, fig. 4; *tomentosus* (Conrad), p. 118, pl. xiii, fig. 8; *breviceps* (Hall), pl. xiii, fig. 21.

Phacops serratus, n. sp., p. 126, pl. xiii, fig. 1.

HALL, J., & CLARKE, J. M. Geological Survey of the States of New York. VII. Trilobites and other Crustacea of the Oriskany, Upper Helderberg, Hamilton, Portage, Chemung, and Catskill Groups. Albany & New York: 1888.

An elaborate treatise on the Crustacea (including Trilobites, *Eurypterida*, and *Limulida*) from the above deposits. All the species recorded

are figured and described in full, with complete synonymy. The genera of Trilobites are characterised, with figures of typical species, pp. xxi-xlix; the genus *Protolimulus*, on p. xlviii; and *Styloneurus* (*Eurypterida*), on p. li. The following species of Trilobites described as new:—

Bronteus tullius, p. 12.

Phacops cristata n. var. *pipa*, p. 18.

Dalmanites (*Hausmannia*, n. subg., p. 28), *phacoptyz*, p. 31; *Coronura*, n. subg., p. 33; *comis*, p. 41; *barrisi*, p. 48; *Corycephalus*, n. subg., p. 55; *pygmaeus*, p. 56; *anchiops* n. var. *sobrinus*, p. 62.

Acidaspis callicera, p. 69, *romingeri*, p. 71.

Lichas hispidus, p. 77; *hylaenus*, p. 81; *contusus*, p. 83; (*Ceratolichas*, n. subg.) *gryps*, p. 84; *dracon*, p. 85.

Dicranognmus pyonurus, p. 86.

Proetus currimarginatus, p. 94; *latimarginatus*, p. 97; *folliceps*, p. 101; *microgemma*, p. 109; *stenopyge*, *ovifrons*, p. 110; *delphinulus*, p. 111; *tumidus*, p. 113; *jejunus*, p. 124; *nevadae*, p. 129.

Phaethonides arenicolus, p. 134; *varicella*, p. 135; *gemmaeus*, p. 136; *cyclurus*, p. 137.

Cyphaspis stephanophora, p. 142; *diadema*, *hybrida*, p. 144; *craspedota*, p. 148; *caelebs*, p. 151.

HERRICK, C. L. The Geology of Licking County, Ohio. Pt. iv. The Subcarboniferous and Waverley Groups. Bull. Denison Univ. iii, pp. 13-110.

Phillipsia meramecensis (Shum.), p. 28, pl. xi, fig. 3; *shumardi* (Herr.), p. 29, pl. ii, fig. 22; *precursor*, n. sp., p. 29, pl. xii, fig. 1.

MATTHEW, G. F. On *Psammichnites* and the early Trilobites of the Cambrian Rocks in Eastern Canada. Am. Geol. ii, pp. 1-9.

MITCHELL, J. On a new Trilobite from Bowring. P. Linn. Soc. N.S.W. iii, pp. 397-399 [pl. xvi, figs. 7-12, of vol. ii].

Acidaspis longispinis, n. sp., from the middle and upper Trilobite beds of Bowring.

REMELÉ, A. Richtigstellung einer auf die Phacopiden-Species *Homalops allumii*, Rem., bezüglichen Angabe. Z. geol. Ges. 1888, p. 586.

SAMPSON, F. A. Notes on the Subcarboniferous Series at Sedalia, Mo., with descriptions of two New Species of Carboniferous Trilobites, by A. W. Vogdes. New York: 1888, 8vo. Tr. N. York Ac. Sci. vii, p. 246.

Phillipsia sampsoni, n. sp., Waverley Series, Sedalia, p. 3 (248).

Griffithides (?) *sedaliensis*, n. sp., Waverley Series, Sedalia, p. 4 (249).

STAINIER, X. Note sur un Trilobite nouveau et sur les *Pentamerus* des Calcaires d'Humérée. Ann. Soc. géol. Belg. xiv, p. 75.

Dechenella striata, n. sp.

VOODES, A. W. The Genera and Species of North American Carboniferous Trilobites. Ann. N. York Ac. iv, pp. 69-105, pls. i-iii.

Proetus, p. 74. pl. ii, figs. 1 & 2; *missouriensis* (Shum.), syn. *shumardi* (Herrick), p. 75. pl. iii, fig. 1; *longaensis* (Hall), p. 78; *peroccidens*

(Hall), p. 79; *tennesseensis* (Winch.), p. 80; *trinucleatus* (Herr.), p. 81, pl. ii, figs. 7-9; *ellipticus* (M. & W.), p. 82, pl. iii, fig. 3.

Phillipsia, p. 83, pl. ii, figs. 4, 10 & 11; *perannulata* (Shum.), p. 84; *cliftonensis* (Shum.), p. 84; *major* (Shum.), p. 85, pl. iii, fig. 14; *missouriensis* (Shum.), p. 86, pl. iii, figs. 1 & 2; *meramecensis* (Shum.), syn. *howi* (Bill.), *vindobonensis* (Hartt), p. 86, pl. iii, fig. 15; *insignis* (Winch.), p. 87; *stevensoni* (M.), p. 88, pl. iii, fig. 6; *vindobonensis* (Hartt), p. 89; *doris* (Hall), p. 90; *rockfordensis* (Winch.), p. 91; *howi* (Bill.), p. 91; *tuberculata* (M. & W.), p. 92.

Griffithides, p. 93, pl. iii, figs. 3, 5, 6, & 12; *portlockii* (M. & W.), p. 93, pl. iii, fig. 9; *bufo* (M. & W.), p. 95, pl. iii, figs. 4, 5, & 10; *scitula* (M. & W.), p. 97, pl. iii, figs. 11, 12, & 13; *singamonensis* (M. & W.), p. 99, pl. iii, figs. 7 & 8; *granulatus* (Weth.), p. 101.

Brachymetopus, p. 102, pl. ii, fig. 13; *lodiensis*, p. 102.

WALCOTT, C. D. Cambrian Fossils from Mount Stephen, North-West Territory of Canada. *Am. J. Sci.* (3) xxxvi, p. 161.

Notes concerning the nomenclature of certain Trilobites recorded by Dr. Rominger from this Region.

WIGAND, G. Ueber die Trilobiten der Silurischen geschiebe in Mecklenberg. *Z. geol. Ges.* 1888, p. 39.

Phacops stokesi (M.-Edw.), syn. *elegans* (Sars), p. 40, pl. vi, fig. 1; *downingia* (Murch.), p. 41, pl. vi, figs. 2 & 3; *dubius* (Steinh.), p. 42, pl. vi, fig. 4; *exilis* (Eichw.), p. 43, pl. iv, fig. 5; *panderi* (F. Schm.), pl. vi, fig. 6; *recurvus* (Lin.), syn. *Homalops altumii* (Rem.); *brogniarti* (Br.), p. 44, fig. 7; *bucculenta* (Sjögr.), p. 45, pl. vi, fig. 8; *urangeli* (F. Schm.), p. 46, pl. vi, figs. 10 & 11; *mazima*, n. sp., p. 47, pl. vi, figs. 12 & 13; *macrura* (Sjögr.), p. 49, pl. vii, fig. 1; *conicophthalma* (Srs.), p. 51, pl. vii, fig. 2; *wesenbergensis* (F. Schm.), p. 52, pl. vii, fig. 3; *eichwaldi* (F. Schm.), pl. vii, fig. 4; *tumida* (Ang.), p. 53, pl. vii, fig. 5; *marginata* (F. Schm.), p. 54, pl. vii, fig. 6.

Lichas illanoides (Niesk.), p. 54, pl. vii, fig. 7, and p. 57, pl. vii, p. 8; *holmi* (F. Schm.), p. 58, pl. vii, fig. 9; *tricuspidata* (Beyr.), p. 59, pl. viii, fig. 1; *proboscidea* (Dam.), p. 64, pl. viii, figs. 2 & 3; *pachyrhina* (Dalm.), p. 65; *deflexa* (Sjögr.), p. 66, pl. viii, fig. 4; *cicatricosa* (Lov.), p. 67, figs. 5 & 6; *nasuta*, n. sp., p. 69, fig. 7; *gibba* (Ang.), p. 70, fig. 8; *illæniformis*, n. sp., p. 71, fig. 9; *triconica* (Dam.), p. 72.

Illæus chiron (Holm.), p. 73, pl. ix, figs. 1 & 2; *crassicauda* (Wahl.), p. 74; *parvulus* (Holm.), p. 74, fig. 6; *sinuatus* (Holm.), p. 75, fig. 3; *fallax* (Holm.), fig. 9; *linnarssoni* (Holm.), p. 76, figs. 4 & 5; *centrotus* (Dalm.), p. 77, fig. 7; *schmidtii* (Niesk.), p. 78; three unnamed species on pp. 78 & 79.

Cheirurus exul (Beyr.), p. 80, pl. x, fig. 1; *spinulosus* (Niesk.), p. 81, fig. 2; *pseudohemicranium* (Knt.), p. 82, fig. 6; *granulatus* (Ang.), p. 83, fig. 7; *tumidus* (Ang.), p. 84, figs. 8 & 9; *cephaloceros* (Niesk.), p. 85, figs. 10 & 11; *variolaris* (Lin.), p. 86, fig. 12.

Sphærezochus mirus (Beyr.), p. 87, pl. x, fig. 13.

Amphion fischeri (Eichw.), p. 87, pl. x, fig. 14.

Cybele bellatula (Dalm.), p. 88, pl. x, fig. 15; *coronata* (F. Schm.), p. 89, fig. 16; *grewigki* (F. Schm.), p. 89, fig. 17; *worthi* (Eichw.), p. 90, fig. 18.

Encrinurus punctatus (Wahl.), p. 91, fig. 23; *obtusius* (Ang.), p. 92, fig. 24; *lævis* (Ang.), p. 92, fig. 25.

Acidaspis mutica (Emmr.), p. 93, figs. 19 & 20; *ovata* (Emmr.), p. 93, figs. 21 & 22.

WOODWARD, H. On the Discovery of Trilobites in the Upper Green (Cambrian) Slates of the Penrhyn Quarry, Bethesda, near Bangor. Q. J. Geol. Soc. 1888, pp. 74-78, pl. iv. [Abstract in Ann. N. H. (6) i, p. 60.]

Conocoryphe viola, n. sp., with notes concerning its affinities with *Paradoxides*, *Asaphus*, *Ogygia*, *Niobe*, *Angelina*, and *Olenus*.

— Note on *Eurypterus* from the Carboniferous. Geol. Mag. (3) v, pp. 419-421.

Notes on *E. scabrosus* (H. Woodw.), and a comparison between it and allied species, especially *E. mansfieldi* (Hall). *E. wilsoni*, n. sp., Coal-measures, Radstock, Somersetshire, described and figured.

MYRIOPODA.

BY

R. INNES POCKOCK.

ANATOMY, PHYSIOLOGY, &c.

BLANCHARD, M. R. [On the Phosphorescence of *Geophilus*]. Bull. Soc. Z. Fr. xiii, p. 186.

The author is of opinion that the luminous matter is either a liquid or mucilaginous substance which is easily spread by rubbing.

GAZAGNAIRE, J. La phosphorescence chez les Myriopodes. Bull. Soc. Ent. Fr. viii, pp. xciii-xcv.

A preliminary notice of the following paper.

—, La phosphorescence chez les Myriopodes. Bull. Soc. Z. Fr. xiii, pp. 182-186.

The light-giving material appears to be contained in a cutaneous secretion from glandular organs, which are ventral in position.

HEATHCOTE, F. G. The post-embryonic development of *Julus terrestris*. Phil. Tr. clxxix, p. 157-179.

The development of the nervous system, heart, tracheæ, and eye is described; and some notes are given concerning the relationship of the Chilopods and Diplopods to *Peripatus* and the *Archipolypoda*.

KINGSLEY, J. S. The Classification of the *Myriopoda*. Am. Nat. xxii, pp. 1118-1121.

Treats of the affinities between the *Diplopoda*, *Chilopoda*, and *Hexapoda*.

PRENANT, O. Observations cytologiques sur les éléments séminaux de la Scolopendre. Bull. Soc. Nancy (2) ix, pp. xxx & xxxi; also Cellule, iii, p. 415.

Observations based upon *Scolopendra morsitans* and a species of *Lithobius*.

SAINT-RÉMY, G. Recherches sur le cerveau de l'Jule. C.R. cvi, pp. 618-620.

A detailed account of the structure of the brain in *Julus sabulosus* and *J. maritimus*.

[SAINT-RÉMY, G.] Sur la structure du cerveau chez le Scorpion et la Scolopendre. Bull. Soc. Nancy (2) ix, p. xxxi.

On the structure of the brain of *Scolopendra morsitans*.

SCHAUFLEDER, B. Beiträge zur Kenntniss der Chilopoden. Anz. Ak. Wien, 1888, v, pp. 44-46.

Treats of the reproductive organs of *Lithobius*, *Cryptops*, and *Geophilus*.

SCHULZE, F. E. Lebende Tausendfüsse aus der Gattung *Spirostreptus*. SB. nat. Fr. 1888, p. 110.

TITLES OF FAUNISTIC AND SYSTEMATIC PAPERS.

BERLESE, A. Acari, Myriopoda, et Scorpiones hucusque in Italia reperta. Pis. XLVI-LI. Padova: 1888.

BOLLMAN, C. H. (1) A Preliminary List of the *Myriopoda* of Arkansas, with Descriptions of New Species. Ent. Am. iv, pp. 1-8.

— (2) Notes upon a Collection of *Myriopoda* from East Tennessee, with a Description of a New Genus and Six New Species. Ann. N. York Ac. iv, pp. 106-112.

— (3) Descriptions of Fourteen New Species of North American Myriopods. P. U. S. Nat. Mus. x, pp. 617-627.

²— (4) A preliminary List of the *Myriopoda* of Arkansas, Little Rock. Little Rock, Ark.: 1888, 8vo [cf. Zool. Anz. xii, p. 155].

KARSCH, F. (1) Zwei neue Myriopoden von Ecuador. B. E. Z. xxxii, pp. 29-31.

— (2) Verzeichnis der von Herrn E. v. Oertzen in den Jahren 1884 u. 1885 in Griechenland und auf Kreta gesammelten Myriopoden. T. c. pp. 220-224.

LATZEL, R. Die vom k. k. obersten Dr. Justyn Karliński in Jahre 1887 in Bosnien, der Herzegowina, und in Novibazar gesammelten Myriopoden. Verh. z.-b. Wien, 1888, pp. 91-94.

POCOCK, R. I. (1) On the Genus *Theatops*. Ann. N. H. pp. 283-290.

— (2) Description of *Scolopendra valida*, Lucas, with notes on allied species. T. c. pp. 335-340.

— (3) Contributions to our Knowledge of the *Myriopoda* of Dominica. T. c. pp. 472-483.

9 species, 6 being new.

— (4) On the *Myriopoda*, *Arachnida*, and Land *Crustacea* of Christmas Island. P. Z. S. 1888, pp. 556-560.

DISTRIBUTION.

EUROPE.

Italy. BERLESE.

Greece and Crete. KARSCH (2).

Bosnia, Herzegovina, and Novibazar. LATZEL.

N. AMERICA.

Indiana, &c. BOLLMAN (3).

Arkansas. BOLLMAN (1).

East Tennessee. BOLLMAN (2).

DOMINICA. POCOCK (3).

ECUADOR. KARSCH (1).

CHRISTMAS I. (Indian Ocean). POCOCK (4).

A species of *Scolopendra* recorded from the Canary Is., Bushire, and Socotra; POCOCK (2).

CHILOPODA.

LITHOBIDÆ.

Lithobius grossipes (C. Koch) n. var. *bosnensis*; *validus* (Mein.), var. *punctulatus* (C. Koch); *spiniger*, n. sp., Bosnia, p. 93: LATZEL.

Lithobius (Arch.) *branneri*, n. sp., p. 107; *cæcus*, n. sp., p. 111; *similis*, n. sp., p. 112, East Tennessee; BOLLMAN (1): *macrops*, n. sp., Athens, Morea, p. 221; KARSCH (2).

Lithobius eigenmanni, n. sp., British Columbia, p. 625; *atkinsoni*, n. sp., Jackson County, p. 625; *tyrannicus*, n. sp., Indiana, p. 626; BOLLMAN (3): *pinguis*, n. sp., Little Rock, p. 7; *celer*, n. sp., Arkansas, p. 7; *ædipes*, n. sp., Little Rock, p. 8; *id.* (1).

Lithobius forficatus (Linn.), Italy, pt. xlvi, No. 9; *borealis* (Mein.), Italy, pt. xlvii, No. 7; *piceus* (L. Koch), Lombardy, &c., No. 8; *eximius* (Mein.), Italy, No. 9; *calcaratus* (C. Koch), Italy, No. 10; *pusillus* (Latz.), Florence, pt. xlix, No. 1; *audax* (Mein.), Florence, No. 2; BERLESE.

SCOLOPENDEIDÆ.

Scolopendra characterized, pt. xlvi, No. 10; *dalmatica* (C. Koch), Sardinia, Mediterranean Is., No. 3; *clavipes* (C. Koch), Italy, Sicily, No. 4; BERLESE.

Scolopendra valida (Lucas), from Canary Is., Bushire, and Socotra, described, p. 336; *prasina* (C. Koch), syn. *nitida* (Porath), p. 338; *viridicornis* (Newp.), syn. *punctidens*, *variegata*, *cristata* (Newport), p. 339; *gigas* (Leach), syn. *gigantea* (Newport), p. 339; synopsis of these 5 species, p. 340; POCOCK (2): *alternans* (Leach), syn. *grayii*, *complanata*, *multispinata* (Newport), Dominica, p. 472; *id.* (3).

Olostigma cormocephalinum, n. sp., Dominica, p. 473, pl. xvi, fig. a; POCOCK (3).

Olostigma kervillei, n. sp., Ecuador, p. 29; *productum*, n. sp., St. Thomas, p. 30; *muticum*, n. sp., Peru, p. 31; KARSCH (1).

Synopsis of Neotropical species of the genus, p. 30; *id. t. c.*

Opisthemea erythrocephalum (C. Koch), Tergestino, pt. xlv, No. 8; BERLESE.

Theatops (Newp.), syn. *Opisthemea* (Wood), characterized, p. 287; *postica* (Say), syn. *postica* (Newp., Wood), *crassipes* (Meinert), p. 289, pl. xvi, figs. 6-10; POCOCK (1).

Cryptops characterized, pt. xlvii, No. 6; BERLESE.

Cryptops hortensis, Leach, Christmas I.; *inermipes*, n. sp., Christmas I., p. 556, fig. 1; POCOCK (4).

All the N. American so-called species of *Cryptops* are referable to *hyalinus* (Say); BOLLMAN, (1) p. 6.

Scolopocryptops meinerti, n. sp., ? syn. *Sc. miersii* (Meinert), Dominica, p. 474; POCOCK (3).

GEOPHILIDÆ.

Chortechelyne vesuviana (Newp.), Italy, Sardinia, pt. xlv, No. 1; BERLESE.

Himantarium characterized, pt. xlviii, No. 5, *gabrielis* (Linn.), Italy, No. 6; *id.*

Stigmatogaster characterized, pt. xlviii, No. 8, *gracilis* (Mein.), Italy, pt. xlv, No. 7; *id.*

Schendyla characterized, pt. xlviii, No. 4, *nemorensis* (C. Koch), Veneto, pt. xlv, No. 6; *id.*

Geophilus condylogaster (Latz.), Florence, pt. xlviii, No. 7; *id.*

Geophilus oweni, n. sp., Indiana, p. 623; *californiensis*, n. sp., California, p. 624; BOLLMAN (3): *okolona*, n. sp., Okolona, p. 5; *id.* (1).

Geophilus tenuitarsis, n. sp., Dominica, p. 475, pl. xvi c; POCOCK (3).

Synopsis of some N. American species of *Geophilus*, p. 623; BOLLMAN (3).

Dignathodon microcephalum (Lucas), Apulia, Sardinia, pt. xlv, No. 5, BERLESE.

Linotania robusta (Mein.), Arkansas, p. 4; *branneri*, n. sp., Little Rock, p. 4; BOLLMAN (1).

Mecistocephalus castaneiceps (Haase), recorded from Christmas I., p. 558; POCOCK (4).

Scolioplanes characterized, pt. xlviii, No. 3, *crassipes* (C. Koch), Italy, pt. xlv, No. 2; BERLESE.

Scolioplanes gracilis, n. sp., East Tennessee, p. 110; BOLLMAN (2).

DIPLOPODA.

POLYDESMIDÆ.

Polydesmus testi, n. sp., Indiana, p. 619; *branneri*, n. sp., Tennessee, p. 620; BOLLMAN (3): *minor*, n. sp., Little Rock, p. 2; *pinetorum*, n. sp., Arkansas, p. 3; *id.* (1).

Paradesmus dasys, n. sp., Baltimore, p. 619; *id.* (3).



Fontaria evides, n. sp., Tennessee, p. 621 ; *rubromarginata*, n. sp., Jackson County, p. 622 ; *montana*, n. sp., Tennessee, p. 622 ; *id. t. c.*

Strongylosoma semirugosum, n. sp., Dominica, p. 477 ; list of the American species of the genus, p. 478 ; POCKOCK (3).

Cylindrodesmus, n. g., near *Strongylosoma*, *hirsutus*, n. sp., Christmas I., p. 559, fig. 2 ; *id.* (4).

Sphaeriodesmus pudicius, n. sp., Okolona, p. 3 ; BOLLMAN (1).

CHORDEUMIDÆ.

Striaria, n. g., *granulosa*, n. sp., East Tennessee, p. 108 ; BOLLMAN (2).

Craspedosoma carinatum, n. sp., East Tennessee, p. 109 ; *id. t. c.* ; *atrolineatum*, n. sp., British Columbia, p. 618 ; *id.* (3) ; *flavidum*, n. sp., Okolona, p. 2 ; *id.* (1).

Craspedosoma mutabile (Latz.), Veneto, pt. xlviii, No. 2 ; BERLESE.

JULIDÆ.

Julus podabrus n. var. *bosnensis*, Bosnia, p. 94 ; LATZEL.

Julus (Typhloiulus) chrysopygus, n. sp., Florence, pt. 1, No. 8 ; BERLESE.

Julus (Mesoiulus) vulnerarius, n. sp., Florence, pt. xlviii, No. 1 ; *id.*

Paraiulus ectenes, n. sp., Orange County, p. 617 ; *sonatus*, n. sp., Washington, p. 618 ; BOLLMAN (3).

Spirostreptus (Nodopyge) exocæti, n. sp., Christmas I., p. 560 ; POCKOCK (4) ; *dominicanus*, n. sp., Dominica, p. 478 ; *id.* (3).

Spirobolus paraensis (Sauss.), Dominica, p. 479 ; *dominicæ*, n. sp., Dominica, 481 ; POCKOCK (3) ; (*Rhinocricus*) *spinipodex*, n. sp., Ecuador, p. 29 ; KARSCH (1).

PROTRACHEATA.

BELL, F. J. A Forgotten Species of *Peripatus* [*Peripatus quitensis*, Schmarda]. Rep. Brit. Ass. lvii, pp. 769 & 770 ; Zool. (3) xii, p. 109.

FLETCHER, J. J. Note on some Living Specimens of *Peripatus leuckarti*, Sânger. P. Linn. Soc. N.S.W. iii, p. 872.

Variation in colour pointed out.

NICHOLLS, H. A. A. Fauna and Flora of the Lesser Antilles. (On *Peripatus* of Dominica.) Nature, xxxviii, p. 566.

Peripatus (juliformis?).

OLLIFF, A. S. Note on a Specimen of *Peripatus* found at Cassilis, N.S.W. P. Linn. Soc. N.S.W. ii, p. 981.

— *Peripatus* in New South Wales. Zool. (3) xii, p. 69.

Occurrence of *P. leuckarti* (Sânger) at Cassilis, New South Wales.

SCLATER, W. L. On the Early Stages of the Development of South American Species of *Peripatus*. Q. J. Micr. Sci. xxviii, pp. 343-363.

An account of the early stages of development of a species of *Peripatus* from Demarara—*Peripatus imthurmi*, n. sp.

SHELDON, L. Notes on the Anatomy of *Peripatus capensis* and *Peripatus novæ-zelandiæ*. Q. J. Micr. Sci. xxviii, pp. 495-499.

The differences between *P. capensis*, *P. novæ-zelandiæ*, and *P. edwardsii* pointed out.

—. On the Development of *Peripatus novæ-zelandiæ*. *Op. cit.* xxix, pp. 283-293.

Early stages of the development of this species described, and a comparison made between it and *P. capensis*.

SEDGWICK, A. The Development of the Cape Species of *Peripatus*. *Op. cit.* xxviii, pp. 373-396. [Abstr. in J. R. Micr. Soc. 1888, pp. 409 & 410.]

A description of the changes presented during the course of development from stage G. to birth.

—. A Monograph on the Species and Distribution of the Genus *Peripatus* (Guilding). Q. J. Micr. Sci. xxviii, pp. 432-493, 12 pls.

The genus characterized, p. 436; *capensis*, Table Mountain, p. 441, pls. xxxiv, xxxv, xxxvi, & xxxviii, figs. 27 & 28; *balfouri*, n. sp., Table Mountain, p. 450, pls. xxxvii, figs. 9 & 10, & xl, fig. 24; *brevis* (Blainv.), Table Mountain, p. 452; *moseleyi*, n. sp., Williamstown, p. 453, pl. xxxvii, fig. 8; *novæ-zelandiæ* (Hutton), New Zealand, p. 456, pls. xxxvii, fig. 7, & xxxix, fig. 17; *leuckarti* (Sänger), Queensland, p. 463; *edwardsii* (Ernst. & Gaffron), Caracas, p. 467, pls. xxxvii, fig. 6, & xxxviii, figs. 12 & 13; *demeraranus*, n. sp., Maccasseema, p. 474; *trinidadensis* (Kennel) and *torquatus* (Kennel), Trinidad, p. 477; *juliformis* (Guilding), St. Vincent, p. 478; *chiliensis*, n. sp., Chili, p. 479.

The paper also contains remarks upon many doubtful species.

INSECTA.

By D. SHARP.

THE most important systematic works dealing with the Insects of the whole world are again, in 1888, to be found under *Orthoptera*, viz., BRUNNER VON WATTENWYL (112), and SAUSSURE (791, 792); the second of De Saussure's memoirs, besides describing a large number of new genera and species, discusses some points of mimicry and the musical apparatus of *Orthoptera*. REUTER'S (736) laborious work on the synonymy of *Rhynchota* is accompanied by a statement of his opinions on some points of nomenclature.

Faunistic works are again extensive. SKUSE (841) has commenced a series of memoirs on the *Diptera* of Australia, a subject that has been hitherto greatly neglected: his work deserves special notice, not only for the reason mentioned, but also because he has, in due course, first taken in hand the minute Gall-flies and Midges; these are very numerous, and are mostly described as new.

SCUDDER (820) has apparently determined to say all that may be said of general interest about the Butterflies of New England, and has thus included a considerable quantity of matter that would not have been misplaced in a book with less restricted faunistic limits.

GODMAN & SALVIN'S work on the Natural History of Central America (319) has made much progress in the order *Coleoptera*.

ROSTOCK & KOLBE'S tables for the determination of the *Neuroptera* of Germany (778) will probably be found useful by other European Neuropterists.

In Anatomy and Physiology some valuable works have appeared. GRASSI, in his memoir (329) on *Thysanura*, discusses several points of importance and general interest, such as the phylogeny of *Insecta*, the classification of *Neuroptera*, and whether the *Thysanura* are primitive or degenerate Insects. RATH (712) and RULAND (786) treat of the organs of sense, the latter giving particulars about the structures existing on the antennæ, while RATH, in his investigations, includes also the trophi. PATTEN continues his studies of "eyes" by a memoir (662) on their development in the larva of *Acilius*; and PLATEAU (674, 675, 676) has published an account of experiments made with the object of ascertaining what the functional powers of the optic organs really are.

EMERY'S paper (230) on the trituratory or suction-crop of Ants deserves attention, as does also CUCCATI'S (172) on the brain of a Fly.

FRITZE (289) deals with an interesting subject, viz., the condition of the alimentary canal in the perfect Insect of *Epheméridæ*; and GRABER (325), under the terms polypody and pantopody, speculates whether, in ancestral Insects, additional, or all of the, segments of the body were furnished with legs. Other important memoirs on embryological questions are given by the same author (324), HENKING (370), and WILL (930).

Papers by DEICHMÜLLER (178) and OPPENHEIM (642) on the fossil Insects of the lithographic stone of Bavaria describe numerous additional forms, besides revising the systematic positions of some previously described by Germar and others. A new periodical of a useful and interesting character, serving as a sort of link between economic and general entomology, has been commenced in America under the title of *Insect Life*.

The Recorder will feel greatly obliged by any omissions or important errors being pointed out to him, so that they may, as far as possible, be remedied in the next volume. Several new stations of economic entomology have been, he understands, established in the United States of North America, and some of them publish reports; but these he has not seen in any library to which he has access.

I.—TITLES.*

ABEILLE DE PERRIN. [See HEYDEN (374).]

1. ALLARD, E. *Synopsis des Galerucines à corselet sillonné transversalement*. 1^{re} partie. Ann. Soc. Ent. Fr. (6) viii, pp. 305–332. [*Coleoptera*.]
2. ——. *Diagnoses de Coléoptères nouveaux du genre Monolepta*. Le Nat. (2) ii, pp. 260, 270, & 286.
3. ALPHERAKI, S. *Neue Lepidopteren*. S. E. Z. xlix, pp. 66–69.
4. AMANS, P.-C. *Comparaisons des organes de la locomotion aquatique*. Ann. Sci. Nat. (7) vi, pp. 1–192.
Pp. 122–126 describe the leg of *Dytiscus*.
5. ANDRÉ, ED. *Species des Hyménoptères d'Europe et d'Algérie*. III. pp. 105–248, pls. iii–vii & xiv.
These parts of the 3rd volume form the 27th and 30th fascicules of the work, and continue *Sphegides*. For the other parts published during 1888, see MARSHALL (555).
6. ——. *Le nid du Lasius fuliginosus*. Le Nat. (2) i, pp. 33–36, woodcuts. [*Hyménoptera*.]
7. ——. *Les métamorphoses de l'Otiorhynchus picipes*. T. c. p. 65, woodcuts. [*Coleoptera*.]

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the journal or work referred to.

8. [ANDRÉ, ED.] Les metamorphoses de l'*Eumolpus vitis*. T. c. pp. 96-98, woodcuts. [*Coleoptera*.]
9. —. La mouche à scie du groseiller. *Nematus ribesii*. T. c. pp. 133 & 134, woodcuts. [*Hymenoptera*.]
10. —. Les nids des *Megachiles*. T. c. pp. 165 & 166, woodcuts. [*Hymenoptera*.]
11. ANTESSANTY, G. D'. Description d'un *Lygèide* nouveau de la Loire-inférieure. Rev. d'Ent. vii, p. 383. [*Rhynchota*.]
12. AFGAR, E. A. Some observations on the Anatomy of *Cicada septendecem*, Linn. J. Trenton Soc. i, pp. 43-46. [*Rhynchota*.]
Describes the mechanism of the male genitalia.
13. ARNAUD, —, & BROGNIART, C. Sur une Cigale vésicante de la Chine et du Tonkin. C.R. cvi, pp. 607-609.
14. ARNOLD, N. Apum mohileviensium species parum cognitæ vel imperfecte descriptæ. Hor. Ent. Ross. xxii, pp. 202-206. [*Hymenoptera*.]
15. ASHMEAD, W. H. A proposed natural arrangement of the *Hymenopterous* families. P. E. Soc. Wash. pp. 96-100.
16. —. Descriptions of three new Eucharids from Florida, with a generic table of the *Eucharinæ*. Ent. Am. iii, pp. 186-188. [*Hymenoptera*.]
17. —. Descriptions of new Florida Chalcids belonging to the subfamily *Encyrtinæ*. Op. cit. iv, pp. 15-17. [*Hymenoptera*.]
18. —. A revised generic table of the *Eurytominae*, with descriptions of new species. Pt. I, t. c. pp. 41-43. [*Hymenoptera*.]
This table includes 11 new genera : the new species are to follow in another part.
19. —. A proposed classification of the *Hemiptera*. T. c. pp. 65-69.
Analytical tables are given of the divisions of families ; and a "genealogical tree" of Insects.
20. —. A revised generic table of the *Chalcidinae*. T. c. pp. 87 & 88. [*Hymenoptera*.]
No species are assigned to the two new genera.
21. —. A generic synopsis of the *Cicadidæ*. T. c. pp. 140 & 141. [*Rhynchota*.]
22. —. Descriptions of some new genera and species of Canadian *Proctotrupidæ*. Canad. Ent. xx, pp. 48-55. [*Hymenoptera*.]
23. —. An interesting new *Chalcid* from Canada. T. c. p. 55. [*Hymenoptera*.]
24. —. Descriptions of some new North American *Chalcididæ*. T. c. pp. 101-107. [*Hymenoptera*.]
25. —. On the Chalcideous Tribe *Chiropachidæ*. T. c. pp. 172-176. [*Hymenoptera*.]

26. [ASHMEAD, W. H.] Description of a new species of *Orthesia* from California. *T. c.* pp. 202-204. [*Rhynchota*.]
27. ATKINSON, E. T. Note on the rice-juice sapper of Madras. P. A. S. B. 1887, pp. 4-7. [*Rhynchota*.]
28. —. Notes on Indian *Rhynchota*: *Heteroptera*. No. 4, J. A. S. B. lvii, pt. 2, pp. 1-72; No. 5, *t. c.* pp. 118-184.
29. °AUGUSTIN, C. H. Wegweiser für Käfersammler. 2nd ed. Ham-
burgh: 1886, 228 pp., figs.
A book for beginners; cf. *Wien. ent. Z.* vii, p. 115.
30. AURIVILLIUS, C. Bidrag till kännedomen om våra solitära getingars
lefnadssätt. Cefv. Ak. Förh. 1888, pp. 605-611. [*Hymenoptera*.]
31. —. Om Myggors förekomst i sala grufva. *Ent. Tidskr.* ix, pp.
97-101. [*Diptera*.]
32. —. *Arrhenophagus*, ett nytt släkte bland *Encyrtiderna*. *T. c.*
pp. 142-147, pl. i. [*Hymenoptera*.]
33. —. Die *Brachyceriden*-Gattung *Theates* Fahr und ihre Arten.
T. c. pp. 149-154. [*Coleoptera*.]
34. AUTRAN, E., & REUTER, O.-M. *Hemiptera* Amurensia. Novas
species descripsit O.-M. Reuter. *Rev. d'Ent.* vii, pp. 199-202.
35. BAKER, G. T. Descriptions of some new species of *Lepidoptera*
from Algeria. *Tr. E. Soc.* 1888, pp. 117-121.
36. —. Descriptions of some new species of *Micro-Lepidoptera* from
Algeria. *Ent. M. M.* xxiv, pp. 254-256.
37. BALLION, E. Kurze Notizen über einige russische *Blaps*-Arten.
II. Artikel. *Bull. Mosc.* 1888, pp. 269-276. [*Coleoptera*.]
38. BALY, J. S. Viaggio di L. Fea in Birmania e regioni vicine. XIII.
List of the *Ilispidae*, together with descriptions of some of the new
species. *Ann. Mus. Genov.* (2) vi, pp. 653-666. [*Coleoptera*.]
39. —. Descriptions of some genera and species of *Galerucinae*.
J. L. S. xx, pp. 156-188. [*Coleoptera*.]
40. —. Descriptions of three new *Phytophaga* from the East. *Ent.*
M. M. xxv, p. 85. [*Coleoptera*.]
41. BANCROFT, J. An inquiry into the maize disease of the Caboolture
district. P. R. Soc. Queensl. iii, pp. 108-111. [*Lepidoptera*.]
42. BARRETT, C. G. Climatic and local variation in our Butterflies.
Ent. M. M. xxv, pp. 79-83. [*Lepidoptera*.]
43. BARTLETT-CALVERT, W. A new species of *Cyclopides* from Chili.
T. c. p. 34. [*Lepidoptera*.]
44. BATES, H. W. On a collection of *Coleoptera* from Korea (Tribes
Geodephaga, *Lamellicornia*, and *Longicornia*), made by Mr. J. H.
Leech, F.Z.S. P. Z. S. 1888, pp. 367-380.
45. —. On some new species of *Coleoptera* from Kiu-Kiang. *T. c.*
1888, pp. 380-383.

46. [BATES, H. W.] Tropical African *Coleoptera*; chiefly from the Zanzibar mainland. Ent. M. M. xxiv, pp. 200-203 & 237-242.
— [See also GODMAN & SALVIN (319).]
47. °BAU, A. Handbuch für Insekten-Sammler. Band II. Die Käfer. Magdeburg: 1888. [*Coleoptera*.]
Cf. Ent. Nachr. xiv, p. 271.
48. BEAUREGARD. Sur la digestion chez les *Vésicants*. C.R. Ass. Sci. Fr. xvi, pt. 2, pp. 662-664.
49. BECKER, A. Die Spinnen und fortgesetzte Mittheilungen über bei Sarepta vorkommende Insekten. Bull. Mosc. 1888, pp. 373-379.
50. BECKER, T. Eine zwitterähuliche Missbildung von *Syrphus lunulatus*, Meig. Wien. ent. Z. vii, pp. 71-74. [*Diptera*.]
He considers that some so-called examples of hermaphroditism are not truly such. [Cf. Osten-Sacken, t. c. p. 94.]
51. —. *Hilara sartor*, n. sp., und ihr Schleier. B. E. Z. xxxii, pp. 7-12. [*Diptera*.]
52. BEDEL, L. Recherches synonymiques sur les *Coléoptères* du nord de l'Afrique. I. Recherches synonymiques. II. Additions à la faune du nord de l'Afrique. Ann. Soc. Ent. Fr. (6) viii, pp. 285-290.
53. —. Description d'un *Curculionide* nouveau. Bull. Soc. Ent. Fr. (6) viii, p. xxxvi. [*Coleoptera*.]
54. BELING, T. Beitrag zur Metamorphose einiger zweiflügeliger Insecten aus den Familien *Tabanidæ*, *Empidæ*, und *Syrphidæ*. Verh. z.-b. Wien, xxxviii, pp. 1-4. [*Diptera*.]
55. BELON, F. M. J. Description d'une espèce nouvelle du genre *Dasycerus*, Brogn. C.R. ent. Belg. xxxii, pp. xcvi-xcviii. [*Coleoptera*.]
56. BERG, C. Un capitolo de Lepidopterologia. An. Soc. Arg. xxvi, pp. 91-103.
A chapter of elementary entomology.
57. BERGROTH, E. *Fahrea* nov. gen. *Hydrophilidarum*. Deutsche e. Z. xxxii, p. 221. [*Coleoptera*.]
58. —. Oesterreichische *Tipuliden*, gesammelt von Prof. J. A. Palmén im Jahre 1870. Verh. z.-b. Wien, xxxviii, pp. 645-656. [*Diptera*.]
59. —. Ueber einige nordamerikanische *Tipuliden*. Wien. ent. Z. vii, pp. 193-201; and II, t. c. pp. 239 & 240. [*Diptera*.]
Most of these novelties are from Sitka.
60. —. On some S. African *Tipulidæ*. Ent. Tidskr. ix, pp. 127-141. [*Diptera*.]
61. —. Synopsis of the genus *Neuroctenus*, Fieb. Cefv. Finska Förh. xxix, pp. 173-189. [*Rhynchota*.]
62. —. Diagnose d'une nouvelle espèce de *Thysanoptères*. C.R. ent. Belg. xxxii, p. xxx.

63. BERGSOE, V., & MEINERT, F. St. Hans-Oldenborren, *Rhizotrogus solstitialis*, og dens snyltende Hvopselarve (*Tiphia femorata*?). Ent. Med. pp. 125-139, woodcut.
- BERLESE, A. [See TARGIONI-TOZZETTI (880).]
64. BEUTENMÜLLER, W. On North American *Tineidæ*. Ent. Am. iv, pp. 29 & 30. [*Lepidoptera*.]
65. BIELZ, E. A. Die Erforschung der Käferfauna Siebenbürgens bis zum Schlusse des Jahres 1886. Verb. siebenb. Ver. xxxvii, pp. 27-114. [*Coleoptera*.]
66. BIGOT, J. M.-F. *Diptères*. Miss. sci. Cap Horn, vi, pp. 1-45, pls i-iv.
59 species, mostly new. Noticed by MIK, Wien. ent. Z. vii, p. 164.
67. —. Note rectificative concernant quelques *Diptères* du Cap Horn. Bull. Soc. Z. Fr. xiii, pp. 101 & 102.
Cf. also Bull. Soc. Ent. Fr. (6) viii, p. xc.
68. —. Énumération des *Diptères* recueillis en Tunisie dans la Mission de 1884 par M. Valéry Mayet. Exploration scientifique de la Tunisie. Zoologie. *Diptères*, pp. 1-11. Paris: 1888.
69. —. *Diptères* nouveaux ou peu connus. 33^e partie. xli. *Tachinidæ*. Ann. Soc. Ent. Fr. (6) viii, pp. 77-101.
70. —. *Diptères* nouveaux ou peu connus. 34^e partie. xlii. Diagnoses de nouvelles espèces. T. c. pp. 253-270.
71. —. Espèces nouvelles du groupe des *Dolichopodi*. Bull. Soc. Ent. Fr. (6) viii, pp. xxix & xxx. [*Diptera*.]
72. —. Description d'un nouveau genre de *Diptère*. T. c. p. cxl.
73. BLACKBURN, T. Descriptions of twenty new species of South Australian *Coleoptera*. Tr. R. Soc. S. Austr. x, pp. 1-11.
74. —. Notes on Australian *Coleoptera*, with descriptions of new species. T. c. pp. 12-30.
75. —. Notes on Australian *Coleoptera*, with descriptions of new species. T. c. pp. 36-51.
76. —. Further notes on Australian *Coleoptera*, with descriptions of new species. T. c. pp. 52-71.
77. —. Further notes on Australian *Coleoptera*, with descriptions of new species. T. c. pp. 177-287.
78. —. Notes on Australian *Coleoptera*, with descriptions of new species. P. Linn. Soc. N.S.W. (2) iii, pp. 805-875.
79. —. Notes on the *Hemiptera* of the Hawaiian Islands. T. c. pp. 343-354.

The family *Capsidæ* is said to be well represented in the islands though he was not able to collect them satisfactorily.

80. BLANC, H. Notice sur une Cochenille parasite des pommiers. Bull. Soc. Vaud. (3) xxiii, pp. 78-84, pl. iv. [*Rhynchota*.]
Relates to *Mytilaspis pomorum*, Bouché.
81. BLANC, L. Note sur la matière colorante de la soie. Ann. Soc. Agric. Lyon, x, pp. 325-330.
82. —. Étude sur la constitution interne de la soie du ver pernyen. T. c. pp. 330-342.
83. BLANCHARD, F. Some account of our species of *Geotrupes*. Psyche, v, pp. 103-110. [*Coleoptera*.]
84. BLOCHMANN, F. Ueber das regelmässige Vorkommen von bakterien-ähnlichen Gebilden in den Geweben und Eiern verschiedener Insecten. Z. Biol. xxiv, pp. 1-15, pl. i.
In the eggs more especially of *Periplaneta orientalis* and *Blatta germanica*.
85. BOCK, H. VON. Parthenogenesis bei *Ocneria dispar*. Ent. Nachr. xiv, p. 56. [*Lepidoptera*.]
86. BOLIVAR, J. Enumération des *Orthoptères* de l'île de Cuba. Mem. Soc. Zool. Fr. i, pp. 116-164.
Includes 145 species. The *Forficulidæ* have been worked out by De Bormans.
87. BONO, F. P. DE. Sull'umore segregato dalla *Timarcha pimelioides*, Sch. Nat. Sicil. viii, pp. 24-28, 44-48, & 72-75. [*Coleoptera*.]
88. BORMANS, A. DE. Viaggio di L. Fea in Birmania e regioni vicine. VII. *Dermaptères*. Ann. Mus. Genov. (2) vi, pp. 431-448.
— [See also BOLIVAR (86).]
89. BORRE, A. P. DE. Liste des cent et cinq espèces de *Coléoptères Lamellicornes* actuellement authentiquement capturées en Belgique avec le tableau synoptique de leur distribution géographique dans le pays. Ann. Ent. Belg. xxxii, pp. 1-5.
90. BORRIES, H. Bidrag til Danske Insekters Biologi. *Hymenoptera*. i. Ent. Med. pp. 199-211.
1 *Phyllotoma aceris*, Klth., 2 *Hoplomerus lævipes*, Shuck.
91. BOS, H. Mieren en bladluizen. Tijdschr. Ent. xxxi, pp. 235-244. [*Hymenoptera* and *Rhynchota*.]
92. BOURGEOIS, J. Synopsis du genre *Henicopus*, Steph. Ann. Soc. Ent. Fr. (6) viii, pp. 5-34, pl. ii. [*Coleoptera*.]
93. —. Deux nouvelles espèces de *Lycides*. Bull. Soc. Ent. Fr. (6) viii, p. xxv. [*Coleoptera*.]
94. —. Description d'une nouvelle espèce de *Malacoderme*. T. c. p. cci. [*Coleoptera*.]
95. —. Une nouvelle espèce de *Malacoderme* du Brésil. T. c. p. cxc. [*Coleoptera*.]

96. [BOURGEOIS, J.] Descriptions de deux *Malacodermes* nouveaux de l'Amérique méridionale. *T. c.* p. clxxvi. [*Coleoptera*.]
97. —. Descriptions de deux nouvelles espèces de *Malacodermes*. *T. c.* pp. clxv & clxvi. [*Coleoptera*.]
98. BRANDT, ED. Larven der wohlfarts'chen Fliege (*Sarcophila wohlfartii*, Portschi.) im Zahnfleische des Menschen. *Zool. Anz.* xi, p. 560.
99. —. *Miscellanea entomologica*. *Hor. Ent. Ross.* xxii, pp. 133-137
This is entirely in the Russian language.
100. BRAUER, FR. Bemerkungen zur Abhandlung des Herrn Prof. Grassi über die Vorfahren der Insecten, &c. *Zool. Anz.* xi, pp. 598 & 599. [*Neuroptera*.]
Relates to Brauer's views as to the division of *Neuroptera* into several orders.
101. BRAUNS, S. Neue *Ichneumoniden* der Schweiz. *MT. schw. ent. Ges.* viii, pp. 1-9. [*Hymenoptera*.]
102. BRENDL, E. Bestimmungstafel der Gattungen der *Pselaphiden* der Vereinigten Staaten von Nord-Amerika. *Deutsche s. Z.* xxxii, pp. 260-264. [*Coleoptera*.]
103. —. Synopsis of the Family of *Pselaphida*. *Tr. St. Louis Acad.* v, pp. 298-302. [*Coleoptera*.]
N. American only.
104. BRENSKE, E. Ueber *Melolonthiden*. *Hor. Ent. Ross.* xxii, pp. 350-361. [*Coleoptera*.]
105. BRISCHKE, G. Bericht über eine zoologische Excursion nach Seeresen im Juni 1886. *Schr. Ges. Danz.* (2) vi, pp. 73-91.
106. —. Zweiter Nachtrag zu den Beobachtungen über die Blatt- und Holzwespen. *Op. cit.* vii, pp. 6-12. [*Hymenoptera*.]
107. —. Bericht über eine Excursion nach Hela während des Juli 1887. *T. c.* pp. 42-64.
108. —. *Hymenoptera aculeata* der Provinzen West- und Ostpreussen. *T. c.* pp. 85-107.

Besides remarks on habits, this includes descriptions of three new parasites and a new *Dipteron*.

109. BROGNIART, C. Les Entomophthorées et leur application à la destruction des insectes nuisibles. *C.R.* cvii, pp. 872-874.

— [See also ARNAUD & BROGNIART (13).]

110. BROWN, S. Report on the Locust campaign of 1886-87. *Blue-book C.*-5250. London: 1888.
111. BRUCE, A. T. Observations on the embryology of Insects and Arachnids. Baltimore: 1887, 31 pp., 6 pls.

Fragmentary observations on various orders. A biographical sketch and portrait are prefixed. *Noticed, J. R. Micr. Soc.* 1888, pp. 567 & 568.

112. BRUNNER, C. v.] W. Monographie der *Stenopelmatiden* und *Gryllacriden*. Verh. z.-b. Wien, xxxviii, pp. 247-394, pls. v-ix. [*Orthoptera*.]

This monograph includes a large number of new genera and new species from nearly all parts of the world.

113. BUTLER, A. G. Notes on the *Lepidopterous* genus *Euchromia*, with descriptions of new species in the collection of the British Museum. Tr. E. Soc. 1888, pp. 109-115, pl. iv.
114. —. On the *Lepidoptera* received from Dr. Emin Pasha. P. Z. S. 1888, pp. 56-85.
115. —. Descriptions of some new *Lepidoptera* from Kilima-njaro. T. c. pp. 91-98.
116. —. On the *Lepidoptera* of Christmas Island. T. c. pp. 542-546. 10 species. The island is in the Indian Ocean.
117. —. On three extremely interesting new Moths of the Family *Chalcosiidae*, from Kilima-njaro and Natal. Ann. N. H. (6) i, pp. 47-50. [*Lepidoptera*.]
118. —. An Account of three Series of *Lepidoptera* collected in North-west India, by Major Yerbury. T. c. pp. 132-151 & 196-209. Enumerates 107 species of *Rhopalocera*.
119. —. On Butterflies of the Genus *Teracolus*, obtained by Mr. H. G. Palliser at Khandesh, in the winter of 1886-87. T. c. pp. 417-419. [*Lepidoptera*.]
120. BÜTSCHLI, O. Bemerkungen über die Entwicklungsgeschichte von *Musca*. Morph. JB. xiv, pp. 170-174, woodcuts. [*Diptera*.]
121. BUYSSON, H. DU. Note sur les larves d'*Elaterides*. Rev. d'Ent. vii, pp. 14-17. [*Coleoptera*.]
122. —. Description d'une nouvelle espèce d'*Élateride* d'Europe. Bull. Soc. Ent. Fr. (6) viii, p. ccii. [*Coleoptera*.]
123. BUYSSON, R. DU. Descriptions de *Chrysidides* nouvelles. (Suite.) Rev. d'Ent. vii, pp. 1-13. [*Hymenoptera*.]
124. CALBERLA, H. Die *Macrolepidopteren*-fauna der römischen Campagna und der angrenzenden Provinzen Mittel-Italiens. Fortsetzung. C.B. Iris, i, pp. 220-272, pl. xii.
- This instalment is devoted to *Noctuidæ* and *Hypenidæ*. Several new varieties are described, but no new species.
125. CAMBOUÉ, R. P. Les sauterelles à Madagascar. Bull. Soc. Acclim. (4) v, pp. 794-797. [*Orthoptera*.]
126. CAMBRIDGE, O. P. On some rare and local *Lepidoptera* lately found in Dorsetshire. P. Dorset N. H. Club, viii, pp. 55-60, pl. ii.
127. CAMERON, P. Descriptions of one new genus and some new species of parasitic *Hymenoptera*. P. Manch. Soc. xxvi, pp. 117-136.

128. [CAMERON, P.] Descriptions of twenty-three new species of *Hymenoptera*. Mem. Soc. Manch. (4) i, pp. 159-183.
129. —. On some new or little known British parasitic *Cynipidæ*. Ent. M. M. xxiv, pp. 209-211. [*Hymenoptera*.]
130. —. Description of a new species of *Phyllotoma*, with note on *Nematus crassicornis*, Htg. T. c. pp. 218 & 219. [*Hymenoptera*.]
— [See also GODMAN & SALVIN (319).]
131. CANDÈZE, E. Viaggio di L. Fea in Birmania e regioni vicine. xiv. *Élatérides* recueillies en Birmanie et au Tenasserim. Ann. Mus. Genov. (2) vi, pp. 667-689. [*Coleoptera*.]
132. CAPRON, E. Additions to the British *Ichneumonidæ*. Ent. M. M. xxiv, p. 217. [*Hymenoptera*.]
133. CABLET, G. Du venin des *Hyménoptères* à aiguillon lisse et de l'existence d'une chambre à venin chez les Mellifères. C.R. cvi, pp. 1737-1740.
Summary, J. R. Micr. Soc. 1888, p. 724.
134. —. Sur une nouvelle pièce, le coussinet, organe annexe de l'aiguillon, chez les *Hyménoptères*. Op. cit. cvii, pp. 955 & 956.
135. —. Sur un nouveau mode de fermeture des trachées, "fermeture operculaire." T. c. pp. 755-757, woodcut.
CARPENTIER. [See LETHIERRY (500).]
136. CARRIÈRE, J. Die Reblaus (*Phylloxera vastatrix*, Pl.). Biol. Centralbl. vii, pp. 737-748. [*Rhynchota*.]

An account of biological observations—chiefly as to the different forms—made by him at Metz.

137. CASEY, T. L. On some new North American *Rhynchophora*. Ann. N. York Ac. iv, pp. 229-296. [*Coleoptera*.]

Deals with *Rhynchitidæ* and *Otiorynchidæ*. Out of 55 species of the latter family collected between Texas and the Pacific coast, only 18 could be identified with any previously described; the remainder are herein described, 12 new genera being established.

138. CAULFIELD, F. B. A Sketch of Canadian *Orthoptera*. Rep. E. Soc. Out. xviii, pp. 59-72.

Includes a preliminary list of Canadian *Orthoptera*.

139. CAZURRO Y RUIZ, M. Enumeración de los *Ortópteros* de España y Portugal. An. Soc. Esp. xvii, pp. 435-451.

243 species are now known from the Peninsula.

CHAMPION, G. C. [See GODMAN & SALVIN (319).]

140. CHAPMAN, T. A. Notes on *Prays curtisellus* and *rustica*. Ent. M. M. xxv, pp. 73-76. [*Lepidoptera*.]

141. CHATIN, —. Sur la dualité du labre des Insectes. Bull. Soc. Philom. (7) xii, pp. 49-51.

The duality is affirmed.

142. CHAVÉE-LEROY, —. La commission supérieure du *Phylloxera* et le rapport de M. Tisserand. J. Microgr. xii, pp. 152-154.
Maintaining that the *Phylloxera* is the result, not the cause, of disease in vines. See also *id. t. c.* p. 218.
143. CHESHIRE, F. R. Bees and Bee-keeping; scientific and practical. Vol. II. Practical. London: 1888, 652 pp.
144. CHOLODKOVSKY, N. Ueber einige *Chermes*-Arten. Zool. Anz. xi, pp. 45-48. [*Rhynchota*.]
145. —. Ueber die Bildung des Entoderms bei *Blatta germanica*. T. c. pp. 163-166, woodcuts. [*Orthoptera*.]
Summary, J. R. Micr. Soc. 1888, p. 406.
146. CHRÉTIEN, P. La ponte et les petites chenilles d'*Hyponomeutes*. Le Nat. (2) i, pp. 43-45, woodcuts. [*Lepidoptera*.]
147. —. À propos de chrysalides. T. c. pp. 93 & 94. [*Lepidoptera*.]
Relates to the envelopes of the wings in the pupæ of apterous *Lepidoptera*. Cf. also RABAUD, *t. c.* p. 140, and CHRÉTIEN again, *op. cit.* ii, pp. 7-9.
148. —. Note sur les chenilles du genre *Acontia*. *Op. cit.* i, pp. 143-145. [*Lepidoptera*.]
149. —. Note sur deux chenilles de diurnes ayant un nombre de pattes anormal. T. c. pp. 185 & 186, woodcuts. [*Lepidoptera*.]
Papilio machaon and *Vanessa urticae*.
150. —. Chenilles d'Algérie. *Op. cit.* ii, pp. 91 & 92. [*Lepidoptera*.]
Description of a new species of *Heliophobus*.
151. CHRISTOPH, H. Diagnosen zu einigen neuen *Lepidopteren* des palæarctischen Faunengebietes. Hor. Ent. Ross. xxii, pp. 308-314.
152. CIACCIO, G. V. Della notomia minuta di quei muscoli che negl' insetti muovono le ali; nuove osservazioni. Mem. Acc. Bologn. (4) viii, pp. 525-538, pls. viii & ix.
153. CIACCIO, V. Nuove osservazioni sopra il figuramento et la struttura delle faccette della cornea e sopra i mezzi refragenti degli occhi composti delle *Muscidae*. Rend. Ist. Bologna, 1887-88, pp. 105 & 106.
Merely a summary.
154. COCHRAN, W. Pen and Pencil in Asia Minor. London: 1887, 464 pp., woodcuts.
A considerable part of this work is devoted to an account of the Silk-worm, and silk industry in Asia Minor.
155. COCKERELL, T. D. A. A new species of *Crambus* from Colorado. Ent. M. M. xxiv, p. 272. [*Lepidoptera*.]
156. —. On the nature of seasonal dimorphism in *Rhopalocera*. Canad. Ent. xx, pp. 86-89.
157. —. Can Insects distinguish between red and yellow? T. c. pp. 176-178.

158. COLENZO, W. A description of a new species of *Coccinella* found in New Zealand. Tr. N. Z. Inst. xx, pp. 40-42. [*Coleoptera*.]
159. COMSTOCK, J. H. On the methods of experiments in economic entomology. Am. Nat. xxii, pp. 1128-1132, pl. xxix.
An account of the Laboratory of Experimental Entomology at Cornell University.
160. —. An introduction to entomology. Pt. I. New York: 1888, 234 pp.
Noticed, Ent. M. M. xxv, p. 165.
161. CONSTANT, A. Descriptions de *Lépidoptères* nouveaux ou peu connus. Ann. Soc. Ent. Fr. (6) viii, pp. 161-172, pl. iv.
162. COOK, A. J. Morphology of the legs of *Hymenopterous* Insecta. Am. Nat. xxii, pp. 193-201, woodcuts.
163. COSMOVICI, L.-C. Sur les Insectes du genre *Mantis*, et description d'une nouvelle espèce des environs de Jassy. Bull. Soc. Z. Fr. xiii, pp. 169-173. [*Orthoptera*.]
164. COSTA, A. Notizie ed osservazioni sulla Geo-Fauna Sarda. Memoria seconda, Atti Acc. Nap. (2) i, No. 2, pp. 1-109; Mem. terza, t. c. No. 9, pp. 1-64; Mem. quarta, t. c. No. 13, pp. 1-31; Mem. quinta, *op. cit.* ii, No. 7, pp. 1-24; Mem. sesta, *op. cit.* ii, No. 8, pp. 1-40.

Contains lists of species of various orders and descriptions of novelties. The first memoir appeared, *op. cit.* ix (1882). The "rapp. prelim." to which he refers appeared in Rend. Acc. Nap. 1882.

165. —. *Miscellanea entomologica*. Memoria prima. Atti Acc. Napoli, (2) i, No. 10, pp. 1-11, pl. i.

The species herein were more briefly described last year, in a memoir bearing the same title.

166. —. *Miscellanea entomologica*. Memoria seconda. Rend. Acc. Nap. (2) ii, pp. 103-109. [*Hymenoptera*.]

167. COTES, E. C. Notes on Economic Entomology. No. 1. A preliminary account of the Wheat and Rice Weevil in India. Calcutta: 1888, pp. 1-27, pl.

The Insect referred to is *Calandra oryzae*, L. The annual loss occasioned by it in wheat exported from India is £150,000. "This sum, however, represents but a fraction of the real loss."

168. —. No. 2. The experimental introduction of Insecticides into India, with a short account of modern Insecticides and methods of applying them. Calcutta: 1888, pp. 1-9.

169. —. On the work of the United States Entomological Commission. J. Ag. Soc. Ind. (n.s.) viii, pp. 169-186.

170. —, & SWINHOE, C. A Catalogue of the Moths of India. Pt. III. *Noctues*, *Pseudo-Deltoides*, and *Deltoides*. Calcutta: 1888, pp. 257-461. [*Lepidoptera*.]

These families include 1420 species.

171. CRESSON, E. T. Synopsis of the families and genera of the *Hymenoptera* of America, North of Mexico, together with a catalogue of the described species and bibliography. Pp. 155-350. Tr. Am. Ent. Soc. supplementary vol.
These pp. consist of the catalogue and bibliography, completing the work.
172. CUCCATI, J. Ueber die Organisation des Gehirns der *Somomya erythrocephala*. Z. wiss. Zool. xlv, pp. 240-269, pls. xx & xxi.
Summary, J. R. Micr. Soc. 1888, p. 407.
173. CUNÍ Y MARTORELL, M. Insectos observados en los alrededores de Barcelona. An. Soc. Esp. xvii, pp. 133-191.
A list of names, with special localities. Includes most of the orders.
174. CZWALINA, G. Die Forcipes der Staphyliniden-Gattung *Lathrobium* (s. str. Rey), Grav. Deutsche e. Z. xxxii, pp. 337-354, pls. iii & iv. [*Coleoptera*.]
175. DALLA TORRE, K. W. v. Hymenopterologische Notizen. I-III. Wien. ent. Z. vii, pp. 218, 249, & 254.
176. —. Biologisches vom Schmetterlingsfang. Soc. Ent. iii, p. 33.
Relates to the conditions under which *Lepidoptera* come to "sugar."
177. DECAUX, —. Notes pour servir à l'étude des insectes nuisibles au marronnier (*Æsculus hippocastanum*). Feuille. Nat. xix, pp. 2-6.
178. DEICHMÜLLER, J. V. Die Insecten aus dem lithographischen Schiefer im Dresdener Museum. MT. min. geol. Mus. Dresden, vii Heft, 1886, pp. 1-84, pls. v.
Includes n. spp. of various orders.
179. DELABY, E. Les variations du hanneton. Bull. Soc. L. Nord. France, viii, pp. 325-331, woodcuts. [*Coleoptera*.]
180. DEMAISON, L. *Lycæna eleusis*. Bull. Soc. Ent. Fr. (6) viii, p. lxvi. [*Lepidoptera*.]
181. DESBROCHERS DES LOGES. Descriptions de nouvelles espèces de *Curculionides*. T. c. pp. ccv & ccvi. [*Coleoptera*.]
182. DESTEFANI, T. Note sulle *Crisididi* di Sicilia. Nat. Sicil. vii, pp. 88-95, &c. [*Hymenoptera*.]
This author's name is spelled in three different ways in the volume ; last year a memoir of his was recorded under "Stefani."
DE STEFANI-PEREZ, T. [See RIGGIO (753).]
183. DEWITZ, H. Entnehmen die Larven der Donacien vermittelt Stigmen oder Athemröhren den Luftraumen der Pflanzen die sauerstoffhaltige Luft? B. E. Z. xxxii, pp. 5 & 6.
184. DEVOE, F. W. The beetle *Zopherus mexicanus*, Sol., cutting metal. J. N. Y. Micr. Soc. iv, pp. 145-147, pl. xiii.

185. DISTANT, W. L. An enumeration of the *Rhynchota* received from Baron von Müller, and collected by Mr. Sayer in New Guinea during Mr. Cuthbertson's expedition. Tr. E. Soc. 1888, pp. 475-489, pl. xiii.
186. —. Descriptions of new Oriental *Homoptera* belonging to the family *Cicadidæ*. Ann. N. H. (6) i, pp. 291-298.
187. —. Descriptions of new species of Oriental *Cicadidæ*. T. c. pp. 370-376. [*Rhynchota*.]
188. —. Descriptions of new species of Oriental *Cicadidæ*. Op. cit. (6) ii, pp. 323-325. [*Rhynchota*.]
189. —. Viaggio di L. Fea in Birmania e regioni vicine. VIII. Enumeration of the *Cicadidæ*. Ann. Mus. Genov. (2) vi, pp. 453-459, pl. iv. [*Rhynchota*.]
190. —. Descriptions of new species of Eastern *Cicadidæ* in the Museo Civico of Genoa. T. c. pp. 519-524. [*Rhynchota*.]
191. —. Enumeration of the Van Volxem collection of *Rhynchota* contained in the Brussels Museum. Part II, C.R. ent. Belg. xxxii, pp. vii-xii; Part III, t. c. pp. lxxviii-lxiii.
192. DITTRICH, R. Ueber *Andrena præcox*, ♀, mit theilweiser männlichen Kennzeichen. Z. Ent. Bresl. (2) xiii, pp. 4 & 5. [*Hymenoptera*.]
193. —. Ueber das Leuchten der Thiere. Beilage zum Programm des Realgymnasiums am Zwinger zu Breslau. Breslau: 1888, 8vo, 70 pp.

For an account of the contents, cf. Wien. ent. Z. vii, p. 163.

194. DOGNIN, P. Notice sur la faune des *Lépidoptères* de Loja et environs (Équateur) et descriptions d'espèces nouvelles. Le Nat. (2) i, pp. 173 & 174, woodcuts.
195. —. Diagnoses de *Lépidoptères* nouveaux de l'Équateur. Op. cit. ii, pp. 48 & 66, woodcuts.
196. —. Diagnose d'un *Lépidoptère* nouveau de l'Équateur. T. c. p. 152, woodcut.
197. DOHRN, C. A. *Lebioderus candezzi*. S. E. Z. xlix, pp. 243 & 244. [*Coleoptera*.]
198. —. *Paussus alinventus*, Dhn. T. c. p. 393. [*Coleoptera*.]
199. DOHRN, H. Neue und wenig bekannte *Blatteln*. T. c. pp. 129-132. [*Orthoptera*.]
200. —. Ueber einige merkwürdige *Pseudophylliden*. T. c. pp. 353-362, pl. ii. [*Orthoptera*.]
201. DOKHTOUROFF, W. Insecta a cl. G. N. Potanin in China et in Mongolia novissime lecta. II. *Cicindelidæ*. Hor. Ent. Ross. xxii, pp. 138-146. [*Coleoptera*.]
202. DOUGLAS, J. W. Notes on some British and Exotic *Coccidæ*. No. 9, Ent. M. M. xxv, pp. 57-60; No. 10, t. c. pp. 86-89; No. 11, t. c. pp. 124 & 125; No. 12, t. c. pp. 150-153.

203. [DOUGLAS, J. W.] Description of a new species of *Aleurodes*. Ent. M. M. xxiv, p. 265. [*Rhyncho*ta.]
204. —. Larvæ of *Lepidoptera* feeding on *Coccidæ*. T. c. pp. 225–228.
205. DRUCE, H. List of the *Lepidoptera Heterocera* collected by Mr. C. M. Woodford, at Suva, Viti Levu, Fiji Islands, with the descriptions of some new species. P. Z. S. 1888, pp. 219–231, pl. xiii.
206. —. List of the *Lepidoptera Heterocera*, with descriptions of the new species, collected by Mr. C. M. Woodford, at Aola, Guadalcanar Island, Solomon Islands. T. c. pp. 570–580, pl. xxix.
207. —. Descriptions of new species of *Lepidoptera*, chiefly from Central America. Ann. N. H. (6) ii, pp. 234–242.
208. —. Descriptions of three new species of *Lepidoptera Heterocera*. Ent. M. M. xxv, p. 62.
209. DRUCE, H. H. Description of a new genus and species of *Lycanidæ*. Op. cit. xxiv, p. 259. [*Lepidoptera*.]
210. —. Descriptions of several new species of *Lycanidæ* from W. Africa. Op. cit. xxv, pp. 108 & 109. [*Lepidoptera*.]
211. DUFOUR, L. Souvenirs d'un savant français. A travers un siècle, 1780–1865, science et histoire. Paris : 1888, pp. vii & 348.
212. DUGÈS, A. *La Llaveia dorsalis*, nobis. Nat. Mex. (2) i, p. 160. [*Rhyncho*ta.]
213. DUMAINE, C. J. Notes on the Tusser seed cocoon (*Antheræa myletta*), and some symptoms of the diseases of its larva. J. Ag. Soc. Ind. (n.s.) viii, pp. 49–54. [*Lepidoptera*.]
214. EATON, A. E. A concise generical synopsis, with an annotated list, of the species of British *Ephemeridæ*. Ent. M. M. xxv, pp. 9–12 & 29–33. [*Neuroptera*.]
215. EDWARDS, J. A synopsis of British *Homoptera-Cicadina*. Part II. Tr. E. Soc. 1888, pp. 13–108, pl. iii.
216. —. On the British species of the genus *Cixius*. Ent. M. M. xxv, pp. 100 & 101. [*Rhyncho*ta.]
217. —. Descriptions of four new species of *Typhlocyba*. T. c. pp. 157 & 158. [*Rhyncho*ta.]
218. —. British *Hemiptera*. Additional species. Op. cit. xxiv, pp. 196–198.
219. EDWARDS, H. New genera and species of North American Moths. Ent. Am. iii, pp. 181–185. [*Lepidoptera*.]
220. —. Catalogue of species of the higher families of the North American *Heterocera* described since Grote's "New Check List" (1872), with those omitted from that publication. T. c. pp. 221–232. [*Lepidoptera*.]

Includes *Sphingidæ* to *Hepialidæ*.

221. [EDWARDS, H.] *Euproserpinus euterpe*, a new species of *Sphingidae*. *Op. cit.* iv, pp. 25 & 26. [*Lepidoptera*.]
222. —. Early stages of some N. American Moths. *T. c.* pp. 61 & 62. [*Lepidoptera*.]
223. EDWARDS, W. H. Descriptions of two new species of *Melitææ*, belonging to N. America. *Canad. Ent.* xx, pp. 81-84. [*Lepidoptera*.]
224. —. Description of a new species of *Anthocharis*. *T. c.* p. 158. [*Lepidoptera*.]
225. —. The Butterflies of N. America. Third series. Parts iv-vi. [*Lepidoptera*.]
226. ELLIS, J. W. The *Coleopterous* fauna of the Liverpool District. *P. Liverp. Biol. Soc.* ii, pp. 182-220.
227. ELWES, H. J. A catalogue of the *Lepidoptera* of Sikkim: with additions, corrections, and notes on seasonal and local distribution. Part 1: *Rhopalocera*. *Tr. E. Soc.* 1888, pp. 269-464, pls. viii-xi.
- Prefaced by particulars as to the locality and its climate. It is richer in *Rhopalocera* than the neighbouring regions. 536 species are recorded. A comparison with the species found in the Malay Peninsula and N.W. Himalaya, is made in a special list, and another table is given of the genera wanting in each of these districts.
228. EIMER, G. H. T. Die Entstehung der Arten auf Grund von Vererbten erworbener Eigenschaften nach den Gesetzen organischen Wachstums. Ein Beitrag zur einheitlichen Auffassung der Lebewelt. I Theil. Jena: 1888, pp. xii & 451.

This is in part entomological.

229. EMERTON, J. H. Changes of the internal organs in the pupa of the Milkweed Butterfly. *P. Bost. Soc.* xxiii, pp. 457-460, pl. iii.
230. EMERY, C. Ueber den sogenannten Kaumagen einiger Ameisen. *Z. wiss. Zool.* xlvi, pp. 378-412, pls. xxvii-xxix. [*Hymenoptera*.]
- Gives particulars of the structure of the triturating-crop, or, as he considers it, suction-crop, in many Ants; also a phylogenetic table. Summary, *J. R. Micr. Soc.* 1888, p. 570.
231. —. Alcune Formiche della Republica Argentina raccolte dal Dott. C. Spegazzini. [*Hymenoptera*.]
232. EFFELSHEIM, —. Ein neues deutsches *Lathrobium*. *Deutsche e. Z.* xxxii, p. 175. [*Coleoptera*.]
233. —. *Staphylinen*, beschrieben von. *T. c.* pp. 401-410. [*Coleoptera*.]
234. —. Neue *Staphylinen* Central-Asiens. *T. c.* pp. 49-67. [*Coleoptera*.]
- [See also OERTZEN (631).]
235. ERSCHOFF, —. *Lepidoptera* nova aut minus cognita. *Hor. Ent. Ross.* xxii, pp. 199-201, pl. xi.

236. EVERTS, E. Tabellarisch overzicht der in Nederland waargenomen soorten van het geslacht *Amara*, Bon. Tijdschr. Ent. xxxi, pp. 329-338. [*Coleoptera*.]
237. FABRE-DOMERGUE. Le ver palmiste. Larve comestible du *Calandra palmarum*. Le Nat. (2) i, pp. 217 & 218, woodcut.
Details, borrowed from Père Labat, as to the consumption of this Insect in the French West Indies.
238. FAIRMAIRE, L. *Coléoptères de l'intérieur de la Chine*. (Suite.) Ann. Ent. Belg. xxxii, pp. 7-46.
239. —. Mission Scientifique du Cap Horn. 1882-83. Tome vi, D 1, *Coleoptères*, pp. 2-63, pls. i & ii. Paris: 1888.
The descriptions have previously appeared in Ann. Soc. Ent. Fr. 1885, but the figures are new.
240. —. Description of new species of South African *Tenebrionida*. Tr. S. Afr. Phil. Soc. iv, pp. 197-199. [*Coleoptera*.]
241. —. *Coléoptères nouveaux de l'Afrique du Musée de Leyde*. Notes Leyd. Mus. x, pp. 255-271.
242. —. Notes sur les *Coléoptères* des environs de Pékin. Rev. d'Ent. vii, pp. 111-160.
243. —. Descriptions de *Coléoptères* de l'Indo-Chine. Ann. Soc. Ent. Fr. (6) viii, pp. 333-378.
244. —. Énumération des *Coléoptères* recueillis par M. le Dr. Hans Schinz dans le sud de l'Afrique. T. c. pp. 172-202.
245. —. Diagnose d'une nouvelle espèce de *Cétonide*. Bull. Soc. Ent. Fr. (6) viii, p. xxxv. [*Coleoptera*.]
246. —. Description d'un *Coléoptère* nouveau. T. c. p. cxxxii.
247. —. Diagnoses de deux *Coléoptères* nouveaux. T. c. pp. cliv & clv.
248. —. Descriptions de deux *Hétéromères* nouveaux de Sumatra. T. c. p. cxci.
249. —. Diagnoses de quelques *Coléoptères* recueillis à Pékin. T. c. pp. cc & cci.
250. —. Diagnoses de deux *Coléoptères* nouveaux de l'Afrique orientale. Le Nat. (2) i, p. 223.
251. —. Diagnoses de *Coléoptères* nouveaux de Madagascar. Op. cit. ii, pp. 11, 12, 22, & 32, woodcuts.
252. —. Diagnoses de *Coléoptères* nouveaux de Madagascar. Op. cit. i, pp. 56, 57, 70-72, & 83, woodcuts.
253. —. Trois *Polyphyllu* de la Chine. C.R. Ent. Belg. xxxii, pp. xvi & xvii. [*Coleoptera*.]
254. FALLOU, J. Note sur l'hybridation chez les *Lepidoptères*. Bull. Soc. Acclim. (4) iv, pp. 58-61.

255. [FALLOU, J.] Souvenirs des bergeries de Sénart. Note sur une éducation du Ver à soie du Mûrier faite à Champrosay. *Op. cit.* v, pp. 678-685.
256. —. Diagnoses d'Hémiptères nouveaux de Minas Geraes. *Le Nat.* (2) i, p. 68.
257. —. Hémiptères nouveaux recueillis à Minas Geraes. *T. c.* p. 36.
258. —. Insectes Hémiptères nouveaux recueillis par M. de la Touche à Fo-Kien. *Op. cit.* viii, p. 413.
259. FAUST, J. Beiträge zur Kenntniss der Käfer des europäischen und asiatischen Russlands, mit Einschluss der Küsten des Kaspischen Meeres. *Hor. Ent. Ross.* xxii, pp. 147-180. [*Coleoptera.*]
260. —. Neue Rüsselkäfer aller Länder. *S. E. Z.* xlix, pp. 284-311. [*Coleoptera.*]
— [See also HEYDEN (373, 377).]
261. FAUVEL, A. Révision du genre *Tropiphorus*. *Rev. d'Ent.* vii, pp. 161-168. [*Coleoptera.*]
262. —. Description de *Carabiques* nouveaux de France. *T. c.* pp. 220-223. [*Coleoptera.*]
263. —. Catalogue des *Coléoptères* gallo-rhéniens. Caen : 1888, pp. 1-16.
This first part extends to *Dytiscidae* part.
264. —. Los estafilinos de Buenos Aires. Notes sur l'ouvrage de M. F. Lynch Arribalzaga. (Suite.) *Rev. d'Ent.* vii, pp. 24 & 25. [*Coleoptera.*]
265. FERNALD, C. H. North American *Pyrilide*. *Ent. Am.* iv, p. 37. [*Lepidoptera.*]
266. —. On the genus *Diatraea*. *T. c.* pp. 119 & 120. [*Lepidoptera.*]
267. —. On the genus *Schænobius*. *T. c.* pp. 135-139. [*Lepidoptera.*]
268. * —. The *Orthoptera* of New England. With 22 illustr. Boston : 1888, 61 pp.
269. FERRARI, E. VON. Die *Hemipteren*-Gattung *Nepa*, Latr. (sens. natur.), monographisch bearbeitet. *Ann. Hofmuseum Wien*, iii, pp. 161-194, pls. viii & ix.
270. FERRARI, P. M. Elenco dei *Rincoti* sardi che si trovano nella collezione del Museo Civico di Genova. *Ann. Mus. Genov.* (2) vi, pp. 545-570. [*Rhynchota.*]
271. FICKE, H. Alpenwanderungen von Schmetterlingen. *Soc. Ent.* ii, p. 163.
272. FIELDE, A. M. Notes on an aquatic Insect, or Insect-larva, having jointed dorsal appendages. *P. Ac. Philad.* 1883, pp. 129 & 130, pl. viii.
No suggestion is made as to the name or affinities of the Insect.
273. —. On an Insect-larva habitation. *T. c.* p. 176.



274. FISCHER, —. *Charinotes richteri*, nov. spec. B. E. Z. xxxii, p. 490. [Coleoptera.]
275. —. Drei neue *Anthonomus*. T. c. pp. 487–489. [Coleoptera.]
276. —. *Gasterocercus richteri*, nov. spec. T. c. p. 154. [Coleoptera.]
277. FLACH, C. Fünf neue *Trichopterygier*. Wien. ent. Z. vii, pp. 101–103. [Coleoptera.]
278. FORBES, S. A. On the present state of our knowledge concerning contagious insect diseases. Psyche, v, pp. 3–12.
279. —. A new parasite of the Hessian Fly. T. c. pp. 39 & 40. [Hymenoptera.]
280. FOREL, A. Appendices à mon mémoire sur les sensations des Insectes. Rec. Z. Suisse, iv, pp. 516–522.
Remarks on recent memoirs, and account of some fresh observations on Ants, with their eyes covered by pigment.
281. —. Ameisen aus den Sporaden, den Cykladen, und Griechenland, gesammelt 1887 von Herrn v. Oertzen. B. E. Z. xxxii, pp. 255–265. [Hymenoptera.]
282. FOWLER, W. W. The *Coleoptera* of the British Islands. Parts xiv–xxiv. London: 1888.
These parts include vol. ii, pp. 161–444, completing *Staphylinidæ*, and vol. iii, pp. 1–160 (*Claricornia*).
283. —. Description of a new species of the *Coleopterous* genus *Languria*. Notes Leyd. Mus. x, p. 159.
284. —. Migration of Insects. Ent. M. M. xxiv, pp. 204 & 205.
Brief particulars obtained from Mr. Cordeaux as to the appearance of Insects at lighthouses.
285. FREAM, W. On the Hessian Fly, or American Wheat-midge, *Oecidomyia destructor*, and its appearance in Britain. Rep. Brit. Ass. 1887, pp. 767 & 768.
286. FRENCH, G. H. Some new *Noctuidæ*. Canad. Ent. xx, pp. 69–71. [Lepidoptera.]
287. FRIEDLAENDER, B. Eine Aberration von *Argynnis paphia*. B. E. Z. xxxii, pp. 491–494. [Lepidoptera.]
Advocates the use of *Lepidoptera* for purposes of experiments concerning heredity.
288. FRIESE, H. Die Schmarotzerbienen und ihre Wirthe. Zool. Jahrb. iii, Syst. Abth. pp. 847–870. [Hymenoptera.]
289. FRITZE, A. Ueber den Darmkanal der *Ephemeriden*. Ber. Freib. Ges. iv, pp. 5–24, pls. ii & iii.
The alimentary canal in the perfect Insect—notwithstanding its brief life—is not rudimentary, but takes on altered functions. Noticed in J. R. Micr. Soc. 1839, p. 206.

290. FROMHOLZ, C. Ueber Missbildungen bei Schmetterlingen besonders der Schmetterlingsflügel. Ein Beitrag zur Biologie der Insekten. B. E. Z. xxxii, pp. 225-232, pl. ii. [*Lepidoptera*.]
291. FEMOUZE, A. Sur l'*Huechys sanguinea* (*Cicada sanguinolenta*, d'Olivier). C.R. cvi, pp. 759-762. [*Rhynchota*.]
292. GADEAU, H. DE KERVILLE. L'*Aphelochirus aestivalis*, Fab. (*Hémiptère Héteroptère*). Le Nat. (2) i, pp. 199 & 200, woodcut.
293. GAHAN, C. J. Descriptions of a new Genus and of some new Species of *Longicorn Coleoptera* of the Family *Lamiidae*, obtained by Mr. C. M. Woodford, in the Solomon Islands. Ann. N. H. (6) i, pp. 190-193.
294. —. On *Longicorn Coleoptera* of the Family *Lamiidae*. T. c. pp. 270-281, pl. xvi.
295. —. On new *Longicorn Coleoptera* from China. Op. cit. ii, pp. 59-67.
296. —. Descriptions of some Indian species of *Longicorn Coleoptera*. T. c. pp. 260-263.
297. —. On new *Lamiide Coleoptera* belonging to the *Monohammus* Group. T. c. pp. 389-401.
298. —. Description of a new species of the *Longicorn* Genus *Cyriocrates*. T. c. p. 450. [*Coleoptera*.]
299. —. On the *Coleoptera* of Christmas Island. P. Z. S. 1888, pp. 538-541.

20 species of almost as many genera. .

300. —. Notes on some types of North American *Cerambycidae* in the British Museum. Tr. Am. Ent. Soc. xv, pp. 299 & 300. [*Coleoptera*.]

Additional notes on the same subject are added by Horn.

301. GAILLOIS, J. Catalogue des *Coléoptères* de Maine-et-Loire. Bull. Soc. Angers, xvii, pp. 269-328.

Extends to *Hydrophilidae*.

302. GANGLBAUER, L. Ueber einige *Prionus*-Arten. Deutsche e. Z. xxxii, pp. 265-268. [*Coleoptera*.]
303. —. Ein neuer *Drymochares* aus dem Kaukasus. T. c. p. 398. [*Coleoptera*.]
304. —. Eine neue *Phytacia*. Hor. Ent. Ross. xxii, p. 376. [*Coleoptera*.]
305. —. Von Herrn E. König in Turemenien gesammelte *Buprestiden* und *Cerambyciden*. T. c. pp. 192-198. [*Coleoptera*.]
- [See also HEYDEN (375), and OERTZEN (631).]
306. GERSTAECKER, A. Weitere Beiträge zur Artenkenntniss der *Neuroptera Megaloptera*. MT. Vorpomm. xix, pp. 89-130.

307. GESTRO, R. Viaggio di Leonardo Fea in Birmania e regioni vicine. iv. Nuove specie di *Coleotteri*. Ann. Mus. Genov. (2) vi, pp. 87-132.

This is preceded by a brief account of Fea's route, and some remarks on the Insects of other orders met with.

308. —. vi. Nuove specie di *Coleotteri*. Decade III. T. c. pp. 171-184.

309. GIARD, A. Sur le *Silpha opaca*, L., insecte destructeur de la betterave. C.R. Soc. Biol. (8) v, pp. 554-558. [*Coleoptera*.]

310. —. Nouvelles remarques sur le *Silpha opaca*, L. T. c. pp. 615-618.

311. —. Note sur deux types remarquables d'Entomophthorées. T. c. pp. 783-787.

Particulars as to the attacks of fungi on several species of Insects.

312. —. Sur quelques Entomophthorées. Bull. Sci. Fr. Belg. (3) i, pp. 298-309.

313. GILSON, G. Étude comparée de la spermatogénèse chez les Arthropodes. (Troisième partie.—Conclusions.) La Cellule, iv, pp. 77-88, pl. xvi.

314. GIRSCHNER, E. Dipterologische Studien. (Beitrag zur Dipteren Fauna Thüringens), pp. 97-100, pl., & pp. 225-234. Ent. Nachr. xiv.

315. GLASER, L. Zur Beobachtung der weissen Nacht Kerze als Schmetterlingsfalle. T. c. pp. 53-55.

316. —. Einige erweiternde und berichtigende Nachträge zu dem Catalogus *Coleopterorum* et *Lepidopterorum*. T. c. pp. 170-174.

317. —. Ueber verschiedene hergebrachte Fehlernamen und Falscherklärungen in der Lepidopterologie. T. c. pp. 136-143.

318. GLEISSNER, H. Beobachtungen an einigen Schmetterlingen insonderheit an *Bombyx pini*. Soc. Ent. iii, p. 89, &c. [*Lepidoptera*.]

Account of appearance and disappearance of some *Lepidoptera* near Berlin.

319. GODMAN & SALVIN. Biologia Centrali-America. Parts lxx-lxxii. London.

The progress made with *Insecta* in 1888 has been as follows :—

Lepidoptera Rhopalocera, by GODMAN & SALVIN, vol. ii, pls. lvii & lviii.

Coleoptera, vol. ii, pt. 1, pp. 97-256, pls. iii-vi: *Silphidæ*, *Corylophidæ*, *Trichopterygidæ*, *Sphæriidæ*, *Scaphidiidæ*, by A. MATTHEWS; *Histeridæ*, by G. LEWIS; *Phalacridæ*, by D. SHARP.

Coleoptera, vol. ii, pt. 2: *Lamellicornia*, by H. W. BATES, pp. 161-336, pls. ix-xvii.

Coleoptera, vol. iv, pt. 1: *Heteromera*, by G. C. CHAMPION, pp. 353-476, pls. xv-xx, extending to *Monommidæ*.

Coleoptera, vol. vi, pt. 1: *Phytophaga*, by M. JACOBY, pp. 585-625, pls. xxxiii-xxxv, and Supplement, pp. 1-80.

Coleoptera, vol. vii, by H. S. GORHAM, pp. 49-112, pls. iii-vi : *Erotylidae*.

Hymenoptera, by P. CAMERON, vol. i, pp. 433-466, pls. xviii-xx ; vol. ii, pp. 1-32, pls. i & ii.

Diptera, vol. ii, by F. M. VAN DER WULP, pp. 1-40, pls. i & ii.

In a notice issued with pt. lxxiii, the Editors state that, up to this part, the number of species of *Insecta* examined and catalogued for the work reaches nearly 15,000 ; of these, upwards of 7500 have been described in the work for the first time, and a very large number of them have been figured.

320. GODMAN, F. D., & SALVIN, O. New species of Butterflies collected by Mr. C. M. Woodford, in the Solomon Islands. *Ann. N. H.* (6) i, pp. 90-101. [*Lepidoptera*.]

321. — & —. New species of Butterflies collected by Mr. C. M. Woodford, in the Solomon Islands. *T. c.* pp. 209-214. [*Lepidoptera*.]

322. GORHAM, H. S. On *Erotylidae* of the Leyden Museum. *Notes Leyd. Mus.* x, pp. 129-151, pl. vii. [*Coleoptera*.]

323. —. A new species of the *Coleopterous* family *Endomychidae*. *T. c.* p. 152.

— [See also GODMAN & SALVIN (319).]

324. GRABER, V. Ueber die primäre Segmentirung des Keimstreifs der Insekten. *Morph. JB.* xiv, pp. 345-368, pls. xiv & xv.

Describes the early development in several species, gives his views on the nature of the entoderm, the number of somites in the various parts of the body, &c. Summary, *J. R. Micr. Soc.* 1888, p. 941.

325. —. Ueber die Polypodie bei Insekten-Embryonen. *Op. cit.* xiii, pp. 586-615, pls. xxv & xxvi.

Refers more particularly to *Hydrophilus*, *Gryllotalpa*, and *Melolontha*, and considers it most probable that the supplementary embryonal appendages were formerly true legs. Summary in *J. R. Micr. Soc.* 1888, p. 568.

326. GRAEF, E. L. A new species of *Hyparpar*. *Ent. Am.* iv, p. 58. [*Lepidoptera*.]

327. GRAESER, L. Beiträge zur Kenntniss der *Lepidopteren*-Fauna des Amurlandes. *B. E. Z.* xxxii, pp. 33-153 & 309-414.

A list of nearly 1000 species, with localities, seasons, and remarks, as well as descriptions of novelties ; preceded by an account of the localities visited and the species predominant therein.

328. GRANDIDIER, A. Histoire physique, naturelle et politique, de Madagascar. Vol. xxii. Histoire naturelle des *Coléoptères* par M. Kunkel d'Herculais. Tome II. Atlas. 1^{re} partie. Paris : 1887, 25 pls.

The corresponding text has not yet been received.



329. GRASSI, B. Anatomia comparata dei *Tisanuri* e considerazioni generali sull' organizzazione degli Insetti. Atti Acc. Rom. (4) iv, pp. 543-606, pls. i-v. [*Neuroptera*.]

Besides a number of details of structure, this discusses some philosophical points of considerable interest.

330. —. Re e regine di sostituzione nel regno delle *Termiti*. Bull. Ent. Ital. xx, pp. 139-147. [*Neuroptera*.]
331. —. Ersatzpaar bei den *Termiten*. Zool. Anz. xi, p. 63. [*Neuroptera*.]
332. —. Weitere Mittheilungen über die Ersatz-Könige und Königinnen im Reiche der *Termiten*. T. c. pp. 615-618.
333. —. La Pulce del cane (*Pulex serraticeps*, Gerv.) è l'ordinario ospite intermedio della *Tenia cucumerina*. Bull. Ent. Ital. xx, p. 66.
334. — & CALANDRUCCIO, S. Ueber einen Echinorhynchus, welcher auch in Menschen parasitirt und dessen Zwischenwirth ein *Blaps* ist. CB. Bakt. Parasit. iii, pp. 522-525.
335. GRIFFITHS, A. B. On the Malpighian tubules of *Libellula depressa*. P. R. Soc. Edinb. xv, pp. 401-403.
- "In the mature Dragon-fly the Malpighian tubules function as true kidneys."
336. —. Researches on the problematical organs of the *Invertebrata*. Op. cit. xiv, pp. 230-237.
- Relates to renal organs, salivary glands, and "liver."
337. GRIFFITHS, G. C. Experiments upon the color-relation between the pupæ of *Pieris rapæ* and their immediate surroundings, by George C. Griffiths; described and summarised by W. White. Tr. E. Soc. 1888, pp. 247-267. [*Lepidoptera*.]
- Though carried out from an independent standpoint, these observations confirm Poulton's conclusions.
338. GRILL, C. Svampbildningar hos Insekter. Ent. Tidskr. ix, pp. 19-27.
339. GROTE, A. R. The origin of ornamentation in the *Lepidoptera*. Canad. Ent. xx, pp. 114-117.
340. —. Characters of protection and defence in Insects. T. c. pp. 154-156.
341. —. A chapter on the structure of Butterflies and Moths. Rep. E. Soc. Ont. xviii, pp. 72-82.
- Discusses briefly several interesting matters indirectly connected with Lepidopterology.
342. —. The classification of the *Bombycidae*. Second paper, Canad. Ent. xx, pp. 166-170; third paper, t. c. pp. 181-185; fourth paper, t. c. pp. 221-225. [*Lepidoptera*.]

For some remarks on these papers, cf. SMITH, t. c. pp. 236-238.

343. [GROTE, A. R.] Some new *Noctuidæ*. *T. c.* pp. 128-131. [*Lepidoptera*.]
344. GROULT, P. Les larves des *Coléoptères*. *Le Nat.* (2) i, pp. 108, 122, & 179, woodcuts.
345. GROUVELLE, A. Viaggio di L. Fen in Birmania e regioni vicine. XI. *Cucujides*. *Ann. Mus. Genov.* (2) vi, pp. 624-629. [*Coleoptera*.]
346. —. Nouvelles espèces d'*Helmides*. *Ann. Soc. Ent. Fr.* (6) viii, pp. 393-410, pls. vii & viii. [*Coleoptera*.]
347. GROVE, E. B. Striated muscle-fibre of the head of *Harpalus caliginosus*, Fab. *J. N. Y. Micr. Soc.* iv, pp. 28-32.
348. GRUM-GRSHIMAILO, G. Novæ species et varietates *Rhopalocerorum* e Pamir. *Hor. Ent. Ross.* xxii, pp. 303-307.
349. GUILLEBEAU, F. Notes pour servir à l'étude des *Psélaphiens*. *Rev. d'Ent.* vii, pp. 203-220 & 368-380. [*Coleoptera*.]
350. GUMPENBERG, C. v. *Systema Geometrarum zone temperationis septentrionalis*. Zweiter Theil. *N. Acta Ac. L.-C. Nat. cur.* lii, pp. 125-255.

Extends to the end of *Eupithecia* (*Eucosminæ*).

351. —. Beiträge zur Kenntniss der Gattung *Erebia*, Dalm. *S. E. Z.* xlix, pp. 365-393. [*Lepidoptera*.]
352. HAASE, E. Zur Kenntniss von *Phengodes*. *Deutsche e. Z.* xxxii, pp. 145-167, pls. i & ii. [*Coleoptera*.]

Describes the sexes of a new species, the ♀ being completely larviform, and discusses the various luminous unidentified larvæ of S. America.

353. —. Tonäusserung von *Argiva*. *C.B. Iris*, i, pp. 337 & 338. [*Lepidoptera*.]
354. —. Dufteinrichtungen indischer Schmetterlinge. *Zool. Anz.* xi, pp. 475-480. [*Lepidoptera*.]
355. —. Duftapparate indo-australischer Schmetterlinge. III. Nachtrag und Uebersicht. *C.B. Iris*, i, pp. 281-336. [*Lepidoptera*.]

Consists of three parts: I, particulars as to presumed scent-organs in many genera of *Rhopalocera*; II, shorter notes as to some species of *Heterocera*; III, a classification of the organs by tabulation of the groups in which they occur. Summary, *Ent. Nachr.* xiv, pp. 347-350.

356. HACKER, L. Atome zur Biologie der Käfer. *Wien. ent. Z.* vii, pp. 49-56. [*Coleoptera*.]
357. HALM, B. Bidrag till kännedom om *Acridiodeernas* yttre morfologi särskildt med hänsyn till de skandinaviska formerna. *Bih. Sv. Ak. Handl.* xiii, Afd. iv, No. 9, pp. 1-14, pl. [*Orthoptera*.]
- Discusses sternum, wings, secondary sexual characters, outer parts of organ of hearing.
358. —. *Chelidura albipennis*, Meg., och *Ch. acanthopygia*, Gen., tvänne för sveriges fauna nya *Forficulina*. *Ent. Tidskr.* ix, pp. 119-122. [*Orthoptera*.]

359. HAGEN, H. A. Stray Notes on *Myrmeleonidæ*. Part 4, *Canad. Ent.* xx, pp. 34-38, 57-60, 72-74, & 93-97; Part 5, *t. c.* pp. 185-191 & 204-211. [*Neuroptera*.]
360. —. Monograph of the *Hemerobidæ*. Part II. *P. Bost. Soc.* xxiii, pp. 276-292. [*Neuroptera*.]
Deals with the genus *Micromus*.
361. —. Three species of *Hemerobius* from Chili. *T. c.* pp. 565 & 566.
362. —. On the genus *Sympetrum*, Newman. *Ent. Am.* iv, pp. 31-34. [*Neuroptera*.]
363. —. Unsere gegenwärtige Kenntniss der *Ephemeren*. *S. E. Z.* xlix, pp. 221-232. [*Neuroptera*.]
364. HAMILTON, J. Natural history notes on *Coleoptera*. No. 4. *Canad. Ent.* xx, pp. 61-67.
365. —. Catalogue of the Myrmophilous *Coleoptera*, with Bibliography and notes. *T. c.* pp. 161-166.
Restricted to the N. American fauna.
366. HANDLIRSCH, A. Die Bienengattung *Nomioides*, Schenck. *Verh. z.-b. Wien*, xxxviii, pp. 395-405, pl. x. [*Hymenoptera*.]
367. —. Die Hummelsammlung des k. k. naturhistorischen Hofmuseums. *Ann. Hofmuseum Wien*, iii, pp. 209-250, pl. x. [*Hymenoptera*.]
368. —. Monographie der mit *Nysson* und *Bembex* verwandten Grabwespen. II. *SB. Ak. Wien*, xcvi, Abt. I, pp. 219-311, pls. i & ii. [*Hymenoptera*.]
369. HELLER, K. M. Die postembryonalen Entwicklungsstände des *Dermestes peruvianus*, Cast. *Verh. z.-b. Wien*, xxxviii, pp. 157-160. [*Coleoptera*.]
370. HENKING, H. Die ersten Entwicklungsvorgänge im Fliegenei und freie Kernbildung. *Z. wiss. Zool.* xlv, pp. 289-336, pls. xxiii-xxvi.
Summary, *J. R. Micr. Soc.* 1888, p. 573.
371. HENSCHEL, G. *Megachile villosa*, ein biologischer Beitrag. *Ent. Nachr.* xiv, pp. 321-323. [*Hymenoptera*.]
372. HENSLOW, G. The origin of floral structures through Insect and other agencies. *International Scientific Series*, vol. 63. London: 1888.
Reviewed in *Ent. M. M.* xxv, p. 141.
373. HEYDEN, L. VON. Ueber die von L. Conradt aus dem Alai-Gebirge mitgebrachten *Coleopteren*. Beitrag XII. Mit Beiträgen von J. Faust. *Deutsche e. Z.* xxxii, pp. 39-44.
374. —. Käfer vom Cilischen Taurus. *T. c.* pp. 68-71. [*Coleoptera*.]
375. —. Neue und interessante *Coleopteren* aus Malatia in Mesopotamien: unter Mitwirkung der Herren L. Ganglbauer und Dr. G. Kraatz. *T. c.* pp. 72-78.

376. [HEYDEN, L. VON.] Coleopterologisch-synonymische Notizen. Wien. ent. Z. vii, pp. 215 & 216.
377. —, & FAUST, J. Beiträge zur Klein-asiatischen *Coleopteren*-Fauna. Deutsche a. Z. xxxii, pp. 45-47.
378. HEYLAERTS, F. J. M. Une *Psychide* inédite de l'Afrique. C.R. Ent. Belg. xxxii, p. lix. [*Lepidoptera*.]
379. —. Noctuelle inédite de l'île de Sumatra. T. c. p. lxi. [*Lepidoptera*.]
380. HOFFMANN, A. Die *Lepidopteren*-Fauna der Mooregebiete des Oberharzes. S. E. Z. xlix, pp. 133-199.
- Relates to the moors in the upper part of the Hartz Mountains, at an elevation of about 800 mètres. Gives particulars as to the locality, a list of 357 species, with remarks as to seasons, food-plants, peculiarities, &c., and concludes with some generalisations as to the peculiarities of the fauna. The *Lepidoptera* exhibit some melanism.
381. —. Beiträge zur Kenntniss der *Butaliden*. T. c. pp. 335-347, pl. i. [*Lepidoptera*.]
- Describes and figures the sexual characters of eight species.
382. HOLMBERG, E. L. Sobre *Apidos Nómadas* de la República argentina. Continuacion. An. Soc. Arg. xxvi, pp. 118-132. [*Hymenoptera*.]
383. —. Viaje á Misiones. Las abejas sociales indígenas. Cap. xvi. Pp. 252-288. [*Hymenoptera*.]
384. HOLMGREN, A. E. Om vatteninsekter såsom förmedlare af vissa mindre djurs öfverflyttning till S. K. "bryor" eller vattengropar. Ent. Tidskr. ix, pp. 107 & 108.
385. HONRATH, E. G. Neue *Rhopalocera*. vii. B. E. Z. xxxii, pp. 247-252, pl. v. [*Lepidoptera*.]
386. —. Wenig bekannte Tagfalter. T. c. pp. 253 & 254. [*Lepidoptera*.]
387. —. Einige Varietäten, Abnormitäten, Monstrositäten, und Hermaphroditen von *Lepidopteren*. T. c. pp. 495-500, pl. vii.
388. —. Kreuzungen zwischen verschiedenen *Parnassius*-Arten und deren muthmassliche Folgen. T. c. pp. 501-503. [*Lepidoptera*.]
389. HOFFGARTEN, M. VON. *Agonum birchleri*, n. sp. Ent. Nachr. xiv, p. 177. [*Coleoptera*.]
390. HORMUZAKI, C. VON. Beiträge zur Käferfauna der Bucovina und Nordrumaniens. T. c. pp. 1-9, 21-31, 34-41, 67-77, 93-96, 105-110, 148-156, 161-169. [*Coleoptera*.]
391. HORN, G. H. Review of the species of *Pleocomma*, with a discussion of its systematic position in the *Scarabæide*. Tr. Am. Ent. Soc. xv, pp. 1-18, pls. i & ii. [*Coleoptera*.]
392. —. *Pleocomma*, Lec., its systematic position and indication of new species. Ent. Am. iii, pp. 233-235. [*Coleoptera*.]

393. [HORN, G. H.] Descriptions of the larvæ of *Glyptus*, *Platypsylla*, and *Polyphylla*. Tr. Am. Ent. Soc. xv, pp. 18-26. [*Coleoptera*.]

He agrees with Leconte in considering *Platypsylla* to be a Coleopterous Insect of the Clavicorn series.

394. —. Miscellaneous *Coleopterous* studies. *T. c.* pp. 26-48.

—. [See also GAHAN (300) and JACOBY (413).]

395. HORVATH, G. Un genre nouveau d'*Hémiptères* du Brésil. *Rev. d'Ent.* vii, p. 75.

396. —. Matériaux pour servir à l'étude des *Hémiptères* de la faune paléarctique. *T. c.* pp. 168-189.

397. —. Uebersicht der europäischen *Cymus*-Arten. *Wien. ent. Z.* vii, pp. 309 & 310. [*Rhynchota*.]

398. HOWARD, L. O. A brief consideration of certain points in the morphology of the family *Chalcididae*. *P. E. Soc. Wash.* i, pp. 65-74. [*Hymenoptera*.]

399. —. The Chalcid genus *Rileya*. *Canad. Ent.* xx, pp. 191-195. [*Hymenoptera*]

This is not the same as *Rileya splendens*, Ashmead. [*Cf.* ASHMEAD, *t. c.* p. 229.]

400. —. Further concerning external Spider-parasites. *Ins. Life*, i, p. 106, fig. 21. [*Hymenoptera*.]

401. —. The Peach-twig Moth and its parasite. *T. c.* pp. 196 & 197. [*Hymenoptera*.]

402. —. The Chinch Bug : a general summary of its history, habits, enemies, and of the remedies and preventives to be used against it. Washington : 1888, 48 pp. *Bull. Dep. Agric. Ent.* No. 17.

This is the same paper as that contained in Riley's Report (*cf.* 754), but with a different pagination and without the plates.

403. HUGUENIN, G. Fauna insectorum Helvetiæ. *Diptera*. Family *Tipulidæ*, Schiner. Schaffhausen : 1888, pp. 1-73.

Published in connection with MT. schw. ent. Ges. The groups, genera, and species are tabulated in detail, and figures of the wings given. 3 new species are described without names.

404. HULST, G. D. New species of *Geometridæ*. No. 4. *Ent. Am.* iii, pp. 213-217. [*Lepidoptera*.]

405. —. Notes on *Geometridæ*. No. 4. *Op. cit.* iv, pp. 49-51. [*Lepidoptera*.]

406. —. New genera and species of *Epipaschiæ* and *Phycitidæ*. *T. c.* pp. 113-118. [*Lepidoptera*.]

407. —. The faunal limits of the United States. *T. c.* p. 70.

408. INCHBALD, P. *Lasioptera cerealis*, Lind. *Ent.* xxi, pp. 193-197. [*Diptera*.]

409. JACOBSEN, O. Lidt om St. Hans-Ormenes Levemaade. Ent. Med. pp. 212-214. [*Coleoptera*.]
410. JACOBY, M. Descriptions of new or little-known species of *Phytophagous Coleoptera* from Africa and Madagascar. Tr. E. Soc. 1888, pp. 189-205, pl. vii.
411. —. Some new species of *Phytophagous Coleoptera* from Brazil (Colony Blumenau). Notes Leyd. Mus. x, pp. 153-160.
412. —. Descriptions of new species of *Phytophagous Coleoptera* from Kiu-Kiang (China). P. Z. S. 1888, pp. 339-351.
413. —. Notes on some N. American species of *Halticinae* (Group *Monoplati*). Tr. Am. Ent. Soc. xv, pp. 302 & 303. [*Coleoptera*.]
Supplementary notes are added by HORN.
— . [See also GODMAN & SALVIN (319).]
414. JACQUET, E. Nouvelle espèce française de *Gymnetron*. Bull. Soc. Ent. Fr. (6) viii, p. xcvii. [*Coleoptera*.]
415. —. Nouveau genre de *Curculionides* français. T. c. pp. cxliii & cxliv. [*Coleoptera*.]
416. JAKOWLEW, A. Quelques nouvelles espèces des monches à scie de l'empire Russe. Hor. Ent. Ross. xxii, pp. 368-375. [*Hymenoptera*.]
417. JAMES, F. L. The unknown horn of Africa. London: 1888, pp. xiv & 322.

This reproduces Butler's paper and plate on "*Lepidoptera* from Somali-Land" (1884).

418. JANSON, O. E. On some species of *Cetoniidae* from the Loo Choo Islands. Ann. N. H. (6) i, pp. 194-196. [*Coleoptera*.]
419. —. Description of a new *Cetoniid*. Notes Leyd. Mus. x, p. 207. [*Coleoptera*.]
420. —. Descriptions of new *Cetoniidae*. T. c. pp. 107-117. [*Coleoptera*.]
421. —. On the male sex of *Argyripa subfasciata*, Rits., and description of a new species of the *Cetoniid* genus *Allorhinus*. T. c. pp. 118-120. [*Coleoptera*.]
422. JOANNIS, L. DE. Descriptions de genres nouveaux et espèces nouvelles de *Lépidoptères*. 1^{re} partie. Ann. Soc. Ent. Fr. (6) viii, pp. 271-274.
423. JORDAN, K. Anatomie und Biologie der *Physapoda*. Z. wiss. Zool. xlvii, pp. 541-620, pls. xxxvi-xxxviii. [*Thysanoptera*.]
Summary in J. R. Micr. Soc. 1889, pp. 203 & 204.
424. JORDAN, R. C. R. Melanism in Birmingham and South Devon. Ent. M. M. xxv, pp. 102 & 103. [*Lepidoptera*.]
425. JOURDAIN, S. Sur le *Machilis maritima*. C.R. cvi, pp. 623-625. [*Neuroptera*.]
Summary, J. R. Micr. Soc. 1888, p. 408.

426. JOURDHEUILLE, C. Notes *Lépidoptérologiques*. 1^{re} partie. Ann. Soc. Ent. Fr. (6) viii, pp. 63–68.
427. KARSCH, F. Die *Meconemiden*. Ein *orthopterologischer* Beitrag. Wien. ent. Z. vii, pp. 159–162.
428. —. *Orthopterologische* Beiträge. B. E. Z. xxxii, pp. 415–463, pl. iv.
Chiefly devoted to a revision of the *Phaneropterides* of Africa and Madagascar.
429. —. *Weissenbornia*, eine neue *Orthopteren-* (*Phaneropteriden*.) Gattung aus Deutsch-Westafrika. Ent. Nachr. xiv, pp. 65–67.
430. —. Zwei neue *Mecopoda*-Arten (*Orthoptera*). T. c. pp. 145–148.
431. —. Beiträge zu Bolivar's Monografía de los *Pirgomorfinos*. T. c. pp. 328–335, 340–346, & 355–361. [*Orthoptera*.]
432. —. Eine Stelzenwanze als Zerstörerin des Zuckerrohres auf Java. T. c. pp. 205–207. [*Rhynchota*.]
433. KENNEL, J. VON. Ueber eine Art *Acentropus*. SB. Ges. Dorp. viii, pp. 297 & 298. [*Lepidoptera*.]
434. KERREMANS, CH. Essai monographique du genre *Sternocera*, Eschscholtz. Ann. Ent. Belg. xxxii, pp. 47–100, pl. i. [*Coleoptera*.]
435. —. *Buprestides* du musée de Calcutta. C.R. ent. Belg. xxxii, pp. lxiii–lxix. [*Coleoptera*.]
436. °KESSLER, H. F. Weitere Beobachtungen und Untersuchungen über die Reblaus, *Phylloxera vastatrix*, Planchon. Cassel: 1888, 58 pp.
Of. Ent. Nachr. xiv, p. 188.
437. KIEFFER, J. J. Ueber Gallmücken und Mückengallen. Verh. z.-b. Wien, xxxviii, pp. 95–114. [*Diptera*.]
I. Beschreibungen neuer Gallmücken Arten. II. Ergänzungen zur Beschreibung einiger schon bekannten Arten. III. Ueber neue oder wenig bekannte Mückengallen deren Erzeuger noch unbekannt sind.
438. —. Beiträge zur Kenntniss der Gallmücken. Ent. Nachr. xiv, pp. 200–205, 243–249, 262–268, & 310–314. [*Diptera*.]
439. KIRBY, W. F. On the Insects (exclusive of *Coleoptera* and *Lepidoptera*) of Christmas Island. P. Z. S. 1888, pp. 546–555.
— [See also SMITH, H. G. (854).]
440. KISSLING, H. Beiträge zur Insektenfauna der Umgebung von Tübingen I. Die bei Tübingen vorkommenden Wasserjungfern (*Odonaten*). JH. Ver. Württ. xlv, pp. 209–231. [*Neuroptera*.]
Descriptions of 31 species, and particulars of their occurrence.
441. KLAPÁLEK, F. Untersuchungen über die Fauna der Gewässer Böhmens. I. Metamorphose der *Trichopteren*. Arch. naturw. landesforsch. Böhmen, vi, No. 5, pp. 1–64, illustrations. [*Neuroptera*.]

442. KOHL, F. K. Neue *Hymenopteren* in den Sammlungen des k. k. naturhistorischen Hofmuseums, III. Verh. z.-b. Wien. xxxviii, pp. 133-136, pls. iii & iv.
443. —. Zur *Hymenopteren*-fauna Tirols. *T. c.* pp. 719-734, pl. xxi.
444. —. Die Crabronen der Section *Thyreopus*, Lep. Zool. Jahrb. iii, Syst. Abth. pp. 543-550, pl. xiv. [*Hymenoptera*.]
445. KOLBE, J. Die geographische Verbreitung der *Neuroptera* und *Pseudoneuroptera* der Antillen, nebst einer Übersicht über die von Herrn Consul Krug auf Portoriko gesammelten Arten. Arch. f. Nat. liv, i, pp. 153-178, pl. xiii.
446. —. Mittheilung über den "Atlas der Thierverbreitung" von Professor Dr. William Marshall, nebst Bemerkungen zu den über die Insekten (*Coleopteren* u. *Lepidopteren*) handelnden Karten. Ent. Nachr. xiv, pp. 124-128.
447. —. Ueber lokale Abänderung weit verbreiteter Thiere. *T. c.* pp. 177-186.
[Cf. REITTER, *t. c.* pp. 252-254.]
448. —. Die Zerstörung der Lebbekalleen von Kairo durch *Xystrocera globosa*, Oliv. *T. c.* pp. 241 & 242. [*Coleoptera*.]
449. —. *Troctes silvarum*, n. sp., eine im Freien lebende Verwandte der Staublaus. *T. c.* pp. 234-236. [*Neuroptera*.]
450. —. Zur Naturgeschichte der *Phryganea grandis* und andere *Trichoptera*. *T. c.* pp. 295-299.
451. —. Afrikanische *Coleoptera* des königlichen Museums für Naturkunde zu Berlin. I Theil. *T. c.* pp. 305-309.
452. —. Zur Kenntniss von Insektenbohrergängen in fossilen Hölzern. Z. deutsche geol. Ges. xl, pp. 131-137, pl. xi. [*Coleoptera*.]
I. Ein Stück Braunkohlenholz aus einem Braunkohlenflütz bei Zschipkau in der Nieder-Lausitz. II. Zwei Gegenstücke verkieselten Holzes aus einer Ablagerung des Senon bei Sahil Alma im Libanon.
—. [See also ROSTOCK & KOLBE (778).]
453. KONOW, F. W. Zwei neue Blattwespen-Arten. SB. Ak. Berlin, 1888, pp. 187-193. [*Hymenoptera*.]
454. —. Die Blattwespengattung *Allantus*, Jur. Deutsche e. Z. xxxii, pp. 209-220. [*Hymenoptera*.]
455. KOWARZ, F. Notizen zu den europäischen Arten der *Dipteren*-Gattung *Gonia*, Mg. Wien. ent. Z. vii, pp. 1-18.
456. KRAATZ, G. *Pseudolimnium eichoffi*, eine neue deutsche Art. Deutsche e. Z. xxxii, pp. 365 & 366. [*Coleoptera*.]
457. —. Ueber die Gattung *Cyphonotus*, Fisch., und einige ihr verwandte neue russische *Melolonthiden*-Genera. *T. c.* pp. 205-208. [*Coleoptera*.]

458. [KRAATZ, G.] Ueber die südamerikanische *Gymnetis pantherina*, Burm., und die mit ihr verwechselten und verwandten Arten. *T. c.* pp. 295–300, pl. v. [*Coleoptera*.]
459. —. *Porphyrobapta*, nov. gen. *T. c.* p. 411. [*Coleoptera*.]
460. —. Eine neue *Charadronota*-Art, nebst Bemerkungen über die bekannten Arten. *T. c.* pp. 413 & 414. [*Coleoptera*.]
461. —. *Pilinopyga*, eine neue *Cetoniden*-Gattung. *T. c.* p. 415. [*Coleoptera*.]
462. —. Ueber *Goliathus atlas* Nickerl, und die Varietäten des *Goliathus cacticus*, Voet. *T. c.* pp. 269–272, pl. vi. [*Coleoptera*.]
463. —. Ueber die *Tenebrioniden*-Gattungen *Microdera*, Esch., und *Dordunea*. *T. c.* p. 294. [*Coleoptera*.]
464. —. Zwei neue *Blaps* von Alai (Turkestan). *T. c.* pp. 195–197. [*Coleoptera*.]
465. —. Beiträge zur Kenntniss der *Coleopteren*-Fauna Koreas von H. J. Kolbe und Dr. L. v. Heyden kurz besprochen von. *T. c.* pp. 199–204.
Critical remarks on Kolbe's paper, with some synonymy.
466. —. Ist *Rhizophagus parallelolocollis* wirklich ein Leichenfreund? *T. c.* pp. 191 & 192. [*Coleoptera*.]
Concludes that it is not.
467. —. Beiträge zur Kenntniss der *Pachyrrhynchus*-Arten. *T. c.* pp. 25–32. [*Coleoptera*.]
—. [See also HEYDEN (375).]
468. KRAATZ-KOSCHLAU, A. v. Die neuen Umtaufungen und Ausgrabungen alter Namen und Beschreibungen der *Ceroglossus*-Gruppe. *S. E. Z.* xlix, pp. 85–127. [*Coleoptera*.]
A discussion of synonymical points, which the Recorder has not attempted to summarize; but pp. 124–127, give a list of the species and varieties.
469. KRASSILSTCHIK, —. La production industrielle des parasites végétaux pour la destruction des insectes nuisibles. *Bull. Sci. Fr. Belg.* (3) i, pp. 461–472.
470. KRAUSS, H. *Orthoptera* duo nova ex insula Lesina Dalmatiæ. *Wien. ent. Z.* vii, pp. 117 & 118.
471. —. Beiträge zur *Orthopteren*-Kunde. *Verh. z.-b. Wien*, xxxviii, pp. 567–576, pl. xv.
472. KRIECHBAUMER, J. Neue *Ichneumoniden* des Wiener Museums. *Ann. Hofmuseum Wien*, iii, pp. 23–36. [*Hymenoptera*.]
473. —. *Ectatus alpinus*. *Ent. Nachr.* xiv, p. 354. [*Hymenoptera*.]
474. —. *Ichneumoniden*-Studien. 12, *t. c.* pp. 9–16; 13, 14, 15, pp. 278–283. [*Hymenoptera*.]
475. —. *Pimpliden*-Studien. 17–20, *t. c.* pp. 337–340. [*Hymenoptera*.]

476. [KRIECHBAUMER, J.] Zur Kenntniss der Gattung *Euceras*. *T. c.* pp. 197-200. [*Hymenoptera*.]
477. KRONFELD, M. Zur Blumenstetigkeit der Bienen und Hummeln. *Verh. z.-b. Wien*, xxxviii, pp. 785 & 786. [*Hymenoptera*.]
478. KÜHN, J. Ueber einer neue Krankheit der Kummelpflanze. *Berliner Tagblatt*, 1887, ix, Nr. 45, p. 265.
Particulars of attacks of *Chlorops glabra*, on *Carum carui*. *Cf. Wien. ent. Z.* vii, p. 111.
479. KUNCKEL D'HERCULAIS, J. Les Acridiens en Algérie. Le *Stauronotus maroccanus* et ses déprédations. *La Nature*, xvi, pp. 71-74 & 305-310.
480. —. Distribution géographique des insectes *Coléoptères* à Madagascar. Comparaison de sa faune avec celle des autres régions du globe. *C.R. Ass. Fr. Sci.* xvi, pt. 2, pp. 680-692.
— [See also GRANDIDIER (328).]
481. KUSTA, J. Neue fossile Arthropoden aus dem Noeggerathien-schiefer von Rakonitz. *SB. böhm. Ges.* 1885, pp. 592-597.
A few remarks on Hexapods.
482. —. O Blatině z lupkového uhlí z Třemosné u Plzně. *Op. cit.* 1888, pp. 387-393.
483. KUWERT, A. Generalübersicht der *Philydrus*-Arten Europas und der Mittelmeer-fauna. *Deutsche e. Z.* xxxii, pp. 273-293. [*Coleoptera*.]
484. —. Generalübersicht der *Hydrenen* der europäischen Fauna. *T. c.* pp. 113-123. [*Coleoptera*.]
485. —. Uebersicht der *Berosus*-Arten Europas, der Mittelmeer-Fauna und der angrenzenden Länder. *T. c.* pp. 129-144. [*Coleoptera*.]
486. —. *Coleotteri nuovi della Sicilia*. *Nat. Sicil.* vii, pp. 234-236.
487. —. *Tre nuovi Coleotteri di Sicilia*. *Op. cit.* viii, pp. 38 & 39.
488. LABONNE, H. Note préliminaire sur l'Anatomie du labre chez les *Coléoptères*. *Mem. Soc. Z. Fr.* i, pp. 228-230, pl. vii.
489. LABOULBÈNE A. Des origines de la soie. *Bull. Soc. Acclim.* (4) v, pp. 869-876.
490. LAMPA, S. Kan *Musca pumilionis*, Bierk., vara identisk med senare författares lika benämnda art af släktet *Oscinis*? *Ent. Tidskr.* ix, pp. 33-39. [*Diptera*.]
491. LEECH, J. H. On the *Lepidoptera* of Japan and Corea. Part II: *Heterocera*, Sect. i. *P. Z. S.* 1888, pp. 580-655, pls. xxx-xxxii.
38 of 352 species are new. He considers that the Lepidopterous fauna of Japan is now fairly known, as out of 250 species captured by himself only 18 were new. Much synonymy is given in this paper, but is not reproduced in our systematic part, as the paper will be consulted by all interested in Eastern *Lepidoptera*.

492. LEFÈVRE, E. Voyage M. Émile Gounelle au Brésil. *Eumolpides*. Ann. Soc. Ent. Fr. (6) viii, pp. 291-304. [*Coleoptera*.]
493. —. Diagnoses de quatre nouvelles espèces d'*Eumolpides*. Bull. Soc. Ent. Fr. (6) viii, p. lxxxi. [*Coleoptera*.]
494. LEMOINE, V. Sur le cerveau du *Phylloxera*. J. Microgr. xii, pp. 150 & 151.
495. —. L'anatomie du *Phylloxera* ailé. T. c. pp. 282 & 283.
496. —. Évolution biologique d'un *Hyménoptère* parasite de l'*Aspidiotus* du laurier rose. C.R. Soc. Biol. (8) v, pp. 153 & 154.
497. —. Sur le cerveau du *Phylloxera*. C.R. cvi, pp. 678-680.
498. LETHIERRY, L. Liste des *Hemiptères* recueillis à Sumatra et dans l'île Nias par M. E. Modigliani. Ann. Mus. Genov. (2) vi, pp. 460-470.
499. —. Description de quatre *Homoptères* nouveaux d'Irkoutsk. Rev. d'Ent. vii, pp. 252-254. [*Rhynchota*.]
500. —, & CARPENTIER. Le *Perineura konowi*, Leth. (spec. nov.). Bull. Soc. L. Nord. Fr. viii, p. 218. [*Hymenoptera*.]
501. LÉVEILLÉ, A. Viaggio di L. Fea in Birmania e regioni vicine. IX. *Trogositidæ*. Ann. Mus. Genov. (2) vi, pp. 605-608. [*Coleoptera*.]
502. —. Catalogue de la famille des *Temnochilides*. Ann. Soc. Ent. Fr. (6) viii, pp. 429-448. [*Coleoptera*.]
- Recognises 335 species.
503. —. Descriptions de *Temnochilides* nouveaux. T. c. pp. 411-428. [*Coleoptera*.]
504. LEWIS, G. Viaggio di L. Fea in Birmania e regioni vicine. XII. *Histeridæ*. Ann. Mus. Genov. (2) vi, pp. 630-645. [*Coleoptera*.]
505. —. On the family *Rhysodidæ*. Ann. N. H. (6) ii, pp. 76-85. [*Coleoptera*.]
- Includes a catalogue of the known species.
506. —. On the Mouth-organs of two species of *Rhysodidæ*. T. c. pp. 483 & 484, woodcuts. [*Coleoptera*.]
507. —. On new species of *Formicurious Histeridæ*, and notes on others. T. c. pp. 144-155. [*Coleoptera*.]
- Includes list of the species of *Heterius* and allied genera.
508. —. Note on a species of *Acrops* from Japan. Ent. xxi, p. 220. [*Coleoptera*.]
509. —. On the capture of a new species of *Pytho* in Japan. T. c. pp. 108 & 109. [*Coleoptera*.]
510. —. Notes on the Japanese species of *Silpha*. T. c. pp. 7-10. [*Coleoptera*.]
511. —. On the species of *Cucujus* found in Japan. Ent. M. M. xxv, p. 84. [*Coleoptera*.]
- [See also GODMAN & SALVIN (319).]

512. LEYDIG, F. Beiträge zur Kenntniss des thierischen Eies im unfruchteten Zustande. Zool. Jahrb. iii, Abth. Anat. pp. 287-432, pls. xi-xvii.

Pp. 326-336 deal with eggs of Insects.

513. LINDEMAN, K. Die schädlichsten Insekten des Tabak in Bessarabien. Bull. Mosc. 1888, pp. 10-77.

514. —. *Cecidomyia heirochloæ*, eine neue Gallmücken-Art. Ent. Nachr. xiv, pp. 50-52. [*Diptera.*]

Cf. MIK, Wien. ent. Z. vii, p. 112.

515. —. Ueber das Vorkommen der Hessianfliege an wildwachsenden Gräsern. Ent. Nachr. xiv, pp. 242 & 243. [*Diptera.*]

516. LINTNER, J. A. Cut-worms. Bull. N. York Mus. No. 6, pp. 1-36.

517. —. The white grub of the May beetle. T. c. pp. 4-31. [*Coleoptera.*]

518. LOCKWOOD, S. The larvæ of the Stag-beetle, eating railroad ties. J. N. Y. Micr. Soc. iv, pp. 147-149.

519. LOEB, J. Der Einfluss des Lichtes auf die Oxydationsvorgänge in thierische Organismen. Arch. ges. Phys. xlii, pp. 393-407.

The observations were made on the pupæ of *Lepidoptera*. Summary, Ent. Nachr. xiv, p. 157.

520. —. Die Orientirung der Thiere gegen das Licht. (Thierischer Heliotropismus.) SB. Ges. Würzb. 1888, pp. 1-5.

521. —. Die Orientirung der Thiere gegen die Schwerkraft der Erde. (Thierische Geotropismus.) T. c. pp. 5-10.

This and the preceding paper are chiefly entomological.

522. LORIFERNE & POULAIN. Catalogue des *Coléoptères* du département de l'Yonne. (Deuxième partie.) Bull. Soc. Yonne, xlii, sc. nat. pp. 39-118.

523. LÖW, F. Mittheilungen über neue und bekannte *Cecidomyiden*. Verh. z.-b. Wien, xxxviii, pp. 231-246.

I. Beschreibung neuer Arten. II. Bemerkungen zu schon bekannten Arten. III. Ueber einige Gallen, deren Erzeuger noch nicht bekannt sind. IV. Mycophage *Cecidomyiden*-Larven.

524. —. Norwegische Phytopto- und Entomocecidien. T. c. pp. 537-548.

The galls are mentioned under the headings of the names of the plants on which they were observed.

525. —. Uebersicht der *Psylliden* von Oesterreich-Ungarn mit Einschluss von Bosnien und der Herzegowina nebst Beschreibung neuer Arten. T. c. pp. 5-40. [*Rhyncho.*]

526. —. Description d'une espèce nouvelle d'*Amblyrhina* et tableau synoptique des espèces de ce genre de *Psyllides*. Rev. d'Ent. vii, pp. 381 & 382. [*Rhyncho.*]

527. LUBBOCK, J. Observations on Ants, Bees, and Wasps. Part xi, with two illustrations. J. L. S. (Zoology) xx, pp. 118-136.

Reviews some recent discoveries on the senses and habits of these *Hymenoptera*, besides some fresh observations. Noticed in J. R. Micr. Soc. 1889, pp. 49 & 50.

528. —. On the senses, instincts, and intelligence of Animals, with special reference to Insects. London: 1888, 292 pp.

Intended for popular purposes, but some of the chapters contain new criticisms, observations on Fabre's works, &c.

529. LUCAS, H. Note sur le parasitisme du *Myobia pumila*, *Diptère* de la Tribu des *Tuchinaires*. Ann. Soc. Ent. Fr. (6) viii, pp. 102-104.

530. LUCAS, T. P. Contribution to a knowledge of the genus *Iodis*. P. Linn. Soc. N.S.W. (2) iii, pp. 1263-1269. [*Lepidoptera*.]

531. LUCIANI, L., & PIUTTI, A. Sui fenomeni respiratori della uova del Bombyce del gelso. Nuove ricerche sperimentali. Bull. Ent. Ital. xx, pp. 67-112, pl. xiv.

532. — & —. Sur les phénomènes respiratoires des œufs du *Bombyx* du mûrier. Arch. Ital. Biol. ix, pp. 319-358, pl. x.

Summary in J. R. Micr. Soc. 1888, p. 726.

533. LUDWIG, F. Schimper, A. F. W., Die Wechselbeziehungen zwischen Pflanzen und Ameisen im tropischen Amerika. Biol. Centralbl. viii, pp. 321-330.

An account of Schimper's work by Ludwig. The work is primarily botanical.

534. —. Weitere untersuchungen über Ameisenpflanzen. T. c. pp. 577-580.

535. LUGGER, O. A new method of preserving transparent Aquatic Insects for the microscope. P. E. Soc. Wash. i, pp. 101 & 102.

536. LUTZ, K. G. Das Buch der Schmetterlinge. Stuttgart: 1888.
Cf. Ent. Nachr. xiv, p. 189.

537. MABILLE, P. *Lépidoptères*. Miss. Sci. Cap Horn, vi, pp. 1-35, pls. i-iii.

The descriptions have appeared elsewhere previously, in 1884 and 1885.

538. —. *Neuroptères*. T. c. pp. 1-9, pl.

539. —. Descriptions de quelques *Lépidoptères* nouveaux. Bull. Soc. Ent. Fr. (6) viii, pp. xlii, xliii, li, lviii, & lix.

540. —. *Lépidoptère* nouveau de Madagascar. T. c. p. lxvii.

541. —. Deux *Lépidoptères* nouveaux, de l'Afrique orientale. T. c. p. clxix.

542. —. Diagnoses de *Lépidoptères* (*Hespérides*) nouveaux. Le Nat. (2) ii, pp. 77, 99, 108, 146, 169, 180, 221, 242, 254, 265, & 275, woodcuts.

543. MACFARLAND, J. A table of the species of *Vespa* found in the United States, with descriptions of two new species. *Tr. Am. Ent. Soc.* xv, pp. 297-299. [*Hymenoptera*.]

544. MACLEAY, W. The Insects of King's Sound and its vicinity. *P. Linn. Soc. N.S.W.* (2) iii. Pt. i, pp. 443-480; Pt. ii, pp. 897-924; Pt. iii, pp. 1227-1246. [*Coleoptera*.]

About 1000 species of *Coleoptera*, many of them new, were obtained by the collector, Mr. Froggatt; 150 belonging to the family *Carabidae*.

545. —. Notes on Mr. Froggatt's collections made during the year 1887, in the vicinity of Derby, King's Sound, N.W. Australia. *Op. cit.* ii, pp. 1017-1020.

The fauna is typical Australian without admixture of Papuan forms.

546. —. Notes on some *Scaritidae* from Queensland, with descriptions of two new species. *T. c.* pp. 972 & 973. [*Coleoptera*.]

547. —. Miscellanea entomologica. No. 5. The "*Helicoides*." *T. c.* pp. 635-675. [*Coleoptera*.]

548. MACLOSKIE, G. The poison-apparatus of the Mosquito. *Am. Nat.* xxii, pp. 884-888, woodcuts. [*Diptera*.]

549. °MACMILLEN, C. Twenty-two common Insects of Nebraska. *Bull. Agr. exp. stat. Nebraska*, i, No. 2, Art. ii, pp. 1-101.

In *Ent. Am.* iv, p. 56, this is said to relate to economy, and to contain but little that is original.

550. MAGRETTI, P. La mouche à scie du rosier. *Le Nat.* (2) i, p. 107, woodcut. [*Hymenoptera*.]

551. MARLATT, C. L. Notes on a red cedar Saw-fly. *Tr. Kansas Ac.* x, pp. 80-82. [*Hymenoptera*.]

552. —. Notes on the oviposition of the Buffalo Tree-hopper. *T. c.* pp. 84 & 85, figs.

Cf. *Wien. ent. Z.* vii, p. 110.

553. MARSEUL, S. DE. L'Abeille, journal d'Entomologie. Paris: 1888, Nos. 325-336.

These parts include continuation of the catalogue of *Coleoptera* of the Ancient World, pp. 385-504; translation of Gauglbauer's Synopsis of *Ceलेmerides*; translation of Reitter's Bestimmung-Tabellen of *Psclaphide* and *Scydmaenidae*; continuation of de Marseul's "Monographie des *Chrysomélides*," pp. 299-394; and continuation of the lists of writings of entomologists.

554. —. Deux espèces nouvelles du genre *Macrosternus*. *Bull. Soc. Ent. Fr.* (6) viii, p. ix. [*Coleoptera*.]

555. MARSHALL, T. A. Species des *Hymenoptères* d'Europe et d'Algérie. iv, pp. 1-324, pls. i-v.

This is a volume of André's work. The pages at present published form fascicules 28, 29, 31, & 32.

556. MARTIN, R. Hibernation de la *Sympecma fusca*. Rev. Sci. Bourb. i, pp. 53-57. [*Neuroptera*.]
557. —. Les *Lépidoptères* du département de l'Indre. Rev. d'Ent. vii, pp. 26-56.
Remarks on habits. Includes *Rhopalocera*, and commences *Heterocera*.
558. MASKELL, W. M. On *Hemops brunneus*, Hutton. Tr. N. Z. Inst. xx, pp. 106-108, pl. x. [*Diptera*.]
Reproduced in Ann. N. H. (6) ii, pp. 194-196.
559. —. An account of the Insects noxious to agriculture and plants in New Zealand: the Scale-Insects (*Occididæ*). New Zealand: 1887, 116 pp., 23 pls.
Reviewed, Ent. M. M. xxiv, p. 262.
560. MASSA, C. Parto verginale nella *Sphinx atropos*. Bull. Ent. Ital. xx, pp. 64 & 65.
561. MASTERS, G. Catalogue of the known *Coleoptera* of New Guinea, including the islands of New Ireland, New Britain, Duke of York, Aru, Mysol, Waigiu, Salwatty, Key, and Jobie. P. Linn. Soc. N.S.W. (2) iii, pp. 271-334 (*Cicindelidæ* to *Ædemeridæ*), and pp. 925-1002 (*Ourculionidæ* to *Coccinellidæ*).
This catalogue extends to 2075 species.
562. MATAS, R. A man-infesting Bot. Ins. Life, i, pp. 76-80. [*Diptera*.]
563. MATHEW, G. F. Life-histories of *Rhopalocera* from the Australian region. Tr. E. Soc. 1888, pp. 137-188, pl. vi. [*Lepidoptera*.]
MATTHEWS, A. [See GODMAN & SALVIN (319).]
564. MAYET, V. *Barbitistes berengueri*. Bull. Soc. Ent. Fr. (6) viii, p. cxi. [*Orthoptera*.]
565. MEADE, R. H. *Diplosis pyrivora*, Riley, the Pear-gnat. Ent. xxi, pp. 123-131. [*Liptera*.]
566. —. Description of the Ash-cauliflower gnat. Ent. M. M. xxv, pp. 77. [*Diptera*.]
567. —. On two additional British species of *Sarcophagidæ*, or Flesh-flies. T. c. pp. 27 & 28. [*Diptera*.]
568. MEDINA, —. Description d'une nouvelle espèce d'*Hymenoptère*. Le Nat. (2) ii, p. 263.
569. —. *Harpiphorus calderoni*, sp. nov. Act. Soc. Esp. xvii, p. 117. [*Hymenoptera*.]
570. MEEHAN, T. Contributions to the life-histories of plants. No. II. P. Ac. Philad. 1888, pp. 274-283.
Includes among other entomological points some observations on *Pronuba*.
571. MÉGNIN, P. La faune des tombeaux. Rev. Sci. Bourb. i, pp. 261-264.
Particulars as to the Insects supposed to frequent bodies buried in coffins. See also La Nature, xvi, pp. 275 & 276.

572. MEINERT, F. En Spyflue, *Lucilia nobilis*, syntende hos Mennesket. Ent. Med. pp. 119-122.
573. —. Catalogus *Coleopterorum danicorum*. Fam. *Mycetophagida*, *Dermestida*, *Byrrhida*, *Georyssida*, *Parnida*, *Heterocerida*, et *Ciada*. T. c. pp. 165-197. Fam. *Staphylinida*; Pars 1, t. c. pp. 215-246.
574. —. Om vore faunistiske Fortegnelser. T. c. pp. 151-164.
575. —. *Scydmaenus*-Larven. T. c. pp. 144-150, pl. i. [*Coleoptera*.]
576. —. Slægten *Metrocoris* Mayr og dens "forma præmatura" *Halobatodes*, B. White. T. c. pp. 140-144. [*Rhynchota*.]
577. —. *Carabus clathratus* og *Tachina pacta*. T. c. pp. 114-118.
578. —. Ein bischen Protest. Zool. Anz. xi, pp. 111-113. [*Diptera*, Cf. RASCHKE (711).

— [See also BERGSOE, V. (63).]

579. MERRIFIELD, F. Report of progress in Pedigree Moth-breeding to Dec. 7th, 1887, with observations on some incidental points. Tr. E. Soc. 1888, pp. 123-136, pl. v. [*Lepidoptera*.]

Includes a tabular statement of the results, and information as to the causes interfering with or promoting success in rearing *Selenia illunaria* and *illustraria*.

580. MEYRICK, E. On the *Pyralidina* of the Hawaiian Islands. T. c. pp. 209-246. [*Lepidoptera*.]

56 species are recorded, 47 of which are considered to be "wholly endemic." There are some considerations as to the derivation of this portion of the fauna. Many of the species described by Butler, in 1882, are referred by Meyrick to different genera.

581. —. Supplement to a monograph of New Zealand *Noctuina*. Tr. N. Z. Inst. xx, pp. 44-47. [*Lepidoptera*.]
582. —. Notes on New Zealand *Geometrina*. T. c. pp. 47-62. [*Lepidoptera*.]
583. —. Notes on New Zealand *Pyraliina*. T. c. pp. 62-73. [*Lepidoptera*.]
584. —. Notes on New Zealand *Tortricida*. T. c. pp. 73-76. [*Lepidoptera*.]
585. —. Descriptions of New Zealand *Tincina*. T. c. pp. 77-106. [*Lepidoptera*.]
586. —. Descriptions of New Australian *Rhopalocera*. P. Linn. Soc. N.S.W. (2) ii, pp. 827-834.
587. —. Revision of Australian *Lepidoptera*. II. T. c. pp. 835-928.

Deals with *Geometridæ* and *Acidaliadæ*, which he now unites under the name "*Geometridæ*." The new species are very numerous. In a supplement some new *Arctiadæ* and *Zyganiidæ* are described.

588. [MEYRICK, E.] Descriptions of Australian *Micro-Lepidoptera*. xiv. *Œcophorida*, continued. T. c. pp. 929-966.

64 new species.

589. MEUNIER, F. *Eumenidæ*. Nat. Sicil. vii, pp. 150 & 151. [*Hymenoptera*.]

Cf. HANDLIRSCH, *op. cit.* viii, pp. 63-66, who strongly condemns these memoirs by Meunier.

590. —. *Megachillidæ*. *Op. cit.* vii, p. 152. [*Hymenoptera*.]

591. —. Tableau dichotomique des espèces, variétés Belges du genre *Bombus*, Latr. T. c. pp. 173-175. [*Hymenoptera*.]

592. —. Tableau dichotomique des espèces variétés Belges du genre *Psithyrus*, Lep. T. c. pp. 175 & 176. [*Hymenoptera*.]

593. —. Prodrome pour servir à la monographie des Espèces, variétés Belges, du genre *Bombus*, Latr. T. c. pp. 195 & 245. [*Hymenoptera*.]

594. —. Description d'une nouvelle espèce d'*Euménides* du Brésil. T. c. p. 300. [*Hymenoptera*.]

595. —. Description d'une nouvelle espèce de *Sphegides* du Brésil. T. c. pp. 301 & 302. [*Hymenoptera*.]

596. MICHAEL, A. D. Parasitism. J. Quek. Club (2) iii, pp. 208-224.

597. MIGULA, W. Die Verbreitungsweise der Algen. Biol. Centralbl. viii, pp. 514-517.

By means of Water-beetles.

598. MIK, J. *Dipterologische Miscellen*. VIII-XIV. Wien. ent. Z. vii, pp. 27, 94, 140, 181, 221, 299, & 327.

599. —. Ueber die Gallmücke, deren Larve auf *Lamium maculatum*, L. Triebgallen erzeugt. T. c. pp. 32-38, pl. i. [*Diptera*.]

600. —. Verbesserungen zu meinem "Verzeichniss der Artnamen, welche in Schiner's Fauna austriaca enthalten sind. T. c. pp. 57-64. [*Diptera*.]

601. —. Ueber einige von G. A. Olivier beschriebene *Dipteren*. T. c. pp. 91-93.

602. —. Ueber die *Dipteren*-Gattung *Allwostylus* Schnabl und über die sogenannten Kreuzborsten bei *Anthomyiden*-Weibchen. T. c. pp. 135-139.

603. —. Zur Biologie von *Ceratopogon*, Meig., nebst Beschreibung einer neuen Art dieser Gattung. T. c. pp. 183-192, pl. ii. [*Diptera*.]

604. —. Vorläufige Diagnose einer neuen *Dipteren*-Art. T. c. p. 243.

605. —. Zur Biologie einiger *Cecidomyiden*. T. c. pp. 311-316, pl. iv. [*Diptera*.]

606. —. Antwort auf Herrn Dr. J. Schnabl's "Entgegnung" auf meine Kritik seiner "Contributions à la faune diptérologique." Ent. Nachr. xiv, pp. 41-45.

607. MINCHIN, E. A. Note on a new organ, and on the structure of the hypodermis in *Periplaneta orientalis*. Q. J. Micr. Sci. xxix, pp. 229-233, pl. xxii.

"It is probable that it is a stink-gland."

608. MINGAZZINI, P. Catalogo dei *Coleotteri* della Provincia di Roma appartenenti alla famiglia dei *Carabici*. Bull. Ent. Ital. xx, pp. 113-128.

609. MOCSÁRY, A. Species sex novæ generis *Pepsis*, Fab., e collectione Musæi bremensis. Abh. Ver. Brem. x, pp. 161-163. [*Hymenoptera*.]

610. —. Az idei sáskajárásról. Termes Közlöny, 1888, pp. 329-343. [*Orthoptera*.]

611. MOORE, F. Descriptions of New Indian *Lepidopterous* Insects from the collection of the late Mr. W. S. Atkinson. *Heterocera* continued (*Pyralidæ*, *Crambidæ*, *Geometridæ*, *Tortricidæ*, *Tineidæ*). Calcutta: 1888, pp. 199-299, pls. vi-viii.

This third part completes the work, commenced in 1879; the second part was published in 1882. There is an appendix of "additional species" of the earlier families of *Lepidoptera*.

612. —. Descriptions of new genera and species of *Lepidoptera Heterocera*, collected by Rev. J. H. Hocking, chiefly in the Kangra district, N.W. Himalaya. P. Z. S. 1888, pp. 390-412.

613. MORAWITZ, F. *Hymenoptera aculeata nova*. Hor. Ent. Ross. xxii, pp. 224-302.

614. MORGAN, A. C. F. Observations on *Coccidæ*. No. 1, Ent. M. M. xxv, pp. 42-48; No. 2, *t. c.* pp. 118-120, pl. ii.

615. —. *Aspidiotus zonatus*, Frauenfeld. Op. cit. xxiv, pp. 205-208. [*Rhynchota*.]

616. MORTON, K. J. On the oral apparatus of the larva of *Wormaldia*, a genus of *Trichoptera*. P. N. H. Soc. Glasg. (n. s.) ii, pp. 115-117, pl. ii.

617. —. The larva and case of *Ithytrichia lamellaris*, Eaton, with references to other species of *Hydroptilidæ*. Ent. M. M. xxiv, pp. 171-173, woodcuts. [*Neuroptera*.]

618. MÖSCHLER, H. B. Beiträge zur Schmetterlings-Fauna der Goldküste. Abh. Senck. Ges. xv, pp. 49-100, plate.

619. —. *Botrys retorskyi*, n. sp. S. E. Z. xlix, p. 128. [*Lepidoptera*.]

620. MÜHLEN, VON ZUR. Ueber hiesige *Formiciden*. SB. Ges. Dorp. viii, pp. 327-333. [*Hymenoptera*.]

Some remarks on habits, as well as list of names.

621. MÜLLER, F. Larven von Mücken und Haarflüglern mit zweierlei abwechselnd thätigen Athemwerkzeugen. Ent. Nachr. xiv, pp. 273-277. [*Neuroptera*.]

622. —. Die Eier der Haarflügler. *T. c.* pp. 259-261. [*Neuroptera*.]

NEUMANN, G. [See TROUESSART & NEUMANN (887).]

623. NICEVILLE, L. DE. Description of a new *Satyrid* from India. P. A. S. B. 1887, p. 147. [*Lepidoptera*.]

624. NICOLAS, H. Études comparatives sur quelques *Hyménoptères* du midi de la France. C.R. Ass. Sci. Fr. xvi, pt. 2, pp. 656-662.

625. —. Étude sur quelques *Pompiles* du midi de la France. *Op. cit.* xvii, pt. 2, pp. 329-335. [*Hyménoptera*.]

626. NOLL, F. C. Der zweifarbige Speckkäfer, *Dermestes bicolor*, als Feind der jungen Haustauben. Zool. Gart. xxix, pp. 307-309.

627. NOVAK, G. B. Primo cenno sulla Fauna dell' isola Lesina in Dalmazia. Wien. ent. Z. vii, pp. 119-132.

A list of 68 species of *Orthoptera*, with remarks on localities and habits.

628. NUSBAUM, J. Die Entwicklung der Keimblätter bei *Melos proscarabæus*, Marsh. Biol. Centralbl. viii, pp. 449-452, woodcuts.

Summary, J. R. Micr. Soc. 1887, p. 942.

629. OERTHUR, C. Études d'entomologie. 12^{me} livraison. Nouveaux *Lépidoptères* d'Afrique et d'Amérique. Premiers états de *Lépidoptères* de la Reunion. *Lépidoptères* européens et algériens. Rennes : 1888, pp. ix & 46, pl. 7.

In a preface the author reaffirms his opinion that priority belongs to the first illustrator, not to the first describer.

630. —. Descriptions de trois espèces nouvelles de *Lépidoptères*. Bull. Soc. Ent. Fr. (6) viii, pp. xl-xlii.

631. OERTZEN, E. v. Berichte über die von E. v. Oertzen im Jahre 1887, in Griechenland u. Klein-Asien gesammelten *Coleopteren*. Deutsche z. Z. pp. 369-397. I. *Otiiorhynchus*-Arten, von STIERLIN, pp. 372-379. II. Zwei neue griechische *Apion*-Arten, von EPPELSHEIM, pp. 380-382. III. *Carabidæ* (*Carabus*, *Procutus*) von L. GANGLBAUER, pp. 383-397.

632. OLLIFF, A. S. Short Life-histories of nine Australian *Lepidoptera*. Ann. N. H. (6) i, pp. 357-362, pl. xx.

633. —. On *Rhopalocera* from the vicinity of Mt. Bellenden-Ker, Queensland. P. Linn. Soc. N.S.W. (2) iii, pp. 394-396.

634. —. Report on a small zoological collection from Norfolk Island. *Insecta*. *Op. cit.* ii, pp. 1001-1014.

He considers the fauna belongs to the Australian rather than to the New Zealand region. Several novelties are described.

635. —. On a new Butterfly of the family *Satyridæ*. T. c. pp. 976 & 977. [*Lepidoptera*.]

636. —. On two instances of colour variation in Butterflies. *Op. cit.* iii, pp. 1250-1252. [*Lepidoptera*.]

The Australian *Pyrausis kershawi* is the same as an aberration of *P. caudui* that occurs occasionally in Europe.

637. OLLIFF, A. S., & PRINCE, H. On a new *Pielus* from the Blue Mountains. *Op. cit.* ii, p. 1015, pl. xxxix. [*Lepidoptera*.]
638. OLIVIER, E. Nouvelle espèce de *Lampyride*, recoltée par M. L. Fca. *Ann. Mus. Genov.* (2) vi, p. 429. [*Coleoptera*.]
639. —. Espèce nouvelle de Vésicant. *Bull. Soc. Ent. Fr.* (6) viii p. lvi. [*Coleoptera*.]
640. —. Descriptions de deux espèces nouvelles de *Lampyrides* du Brésil. *T. c. p.* clxvii. [*Coleoptera*.]
641. —. Études sur les *Lampyrides*. III. Les genres à antennes flabellées. 2^e partie. *Ann. Soc. Ent. Fr.* (6) viii, pp. 35-62, pl. i. [*Coleoptera*.]
642. OPPENHEIM, P. Die Insectenwelt des lithographischen Schiefers in Bayern. *Paläontogr.* xxxiv, pp. 215-247, pls. xxx & xxxi.
Includes many new species in several orders.
643. ORMAY, S. *Coleoptera nova e Transsilvania*. *Wien. ent. Z.* vii, pp. 165-168.
644. ORMEROD, E. A. Report of observations of injurious Insects and common farm pests during the year 1888, with methods of prevention and remedy. Twelfth report. London: 1889.
645. —. Annual Report for 1887 of the consulting Entomologist. *J. R. Agric. Soc.* (2) xxiv, pp. 289-296.
646. OSBORN, H. The food habits of the *Thripidae*. *Ins. Life*, i, pp. 137-142.
647. OTTO, A. Alpenwanderungen von Insekten. *Soc. Ent.* iii, pp. 3, &c.
648. OUDEMANS, J. T. De Nederlandsche *Macrolepidoptera*. *Bijdr. Dierk. Feest-Nummer*, p. 13.
A supplementary list of species and localities.
649. —. Beiträge zur Kenntniss der *Thysanura* und *Collembola*. *Bijdr. Dierk.* xvi, pp. 147-227, pls. i-iii.
An account of the anatomy of *Machilis maritima*, Latr., and a comparison with other *Thysanura* and *Collembola*.
650. PACKARD, A. S. List of the Spiders, Myriopods, and Insects of Labrador. *Canad. Ent.* xx, pp. 141-149.
651. —. On the systematic position of the *Mallophaga*. *P. Am. Phil. Soc.* xxiv, pp. 264-272, woodcuts.
Referred to "*Platyptera*" as a distinct suborder.
652. —. Entomology for beginners; for the use of young folks, fruit growers, farmers, and gardeners. New York: 1888, 367 pp.
Reviewed in *Ent. M. M.* xxv, p. 140.
653. PAGENSTECHER, A. Beiträge zur *Lepidopteren*-fauna des Malayischen Archipels. (v.) Verzeichniss der Schmetterlinge von Amboina nebst Beschreibung neuer Arten. Wiesbaden: 1888, 133 pp.

654. PALUMBO, A. Alcune note biologiche sull' *Eumenes pomiformis*, Fab. Nat. Sicil. vii, pp. 162, 184, & 207. [*Hymenoptera*.]
655. PANDELLÉ, L. Études sur les *Muscides* de France. Rev. d'Ent. vii, pp. 258-362. [*Diptera*.]
- An extensive review of the external organization, made as a preliminary to synopses of the genera and species.
656. PANTEL, R. P. J. Catalogue des *Coléoptères* carnassiers terrestres des environs d'Uclés avec les descriptions de quelques espèces et variétés nouvelles. An. Soc. Esp. xvii, pp. 193-245.
- Uclés is a village in New Castille.
657. PARONA, C. Note sulle *Collembole* e sui *Tisanuri*. III e IV. Ann. Mus. Genov. (2) vi, pp. 78-86. [*Neuroptera*.]
- III. Nuova specie di *Japyx* del Guatemala. IV. Nuova specie di *Smynthurus* raccolta in Sardegna.
658. —. Res. Ligusticæ. VI. *Collembole* e *Tisanuri* finora riscontrate in Liguria. T. c. pp. 133-154, pls. i & ii. [*Neuroptera*.]
659. PASCOE, F. P. Descriptions of some new genera and species of *Curculionidæ*, mostly Asiatic. Part v. Ann. N. H. (6) ii, pp. 409-418. [*Coleoptera*.]
660. —. On some new Longicorn *Coleoptera*. Tr. E. Soc. 1888, pp. 491-513, pl. xiv.
- New genera and species from various regions.
661. PATOUILLARD, N. Note sur le genre *Cordyceps*, champignon parasite des insectes. Le Nat. (2) i, pp. 203 & 204, woodcuts.
- The different orders of Insects are attacked by different species of the fungus.
662. PATTEN, W. Studies on the eyes of Arthropods. II. Eyes of *Acilius*. J. Morph. ii, pp. 97-176, pls. vii-xiii.
- Relates to the development of the eyes of the larva. A summary is given in J. R. Micr. Soc. 1888, pp. 938-940.
663. PECKHAM, G. W. Some observations on the special senses of Wasps. P. N. H. Soc. Wisconsin, 1887.
- Cf. FOREL, Rec. Z. Suisse, iv, p. 517.
664. PÉRINGUEY, L. Descriptions of some new species of *Coleoptera* in the British Museum. Ann. N. H. (6) ii, pp. 219-223.
665. —. Insects injurious to forest trees in South Africa. Tr. S. Afr. Phil. Soc. iv, pp. 15-25.
666. —. A note on the *Phylloxera vastatrix* at the Cape. T. c. pp. 57-62.
667. —. Second contribution to the South African *Coleopterous* fauna. T. c. pp. 67-195, pls. i-iv.
668. —. Descriptions de deux espèces nouvelles du G. *Brachycerus*. C.R. ent. Belg. xxxii, pp. lxxvii & lxxviii. [*Coleoptera*.]

669. PETERSEN, W. Die *Lepidopteren*-Fauna des arktischen Gebietes von Europa und die Eiszeit. Beitr. Russ. Reiches (3) iv, pp. 1-142.

A discussion on geographical distribution in Europe, with table of the distribution of Arctic *Lepidoptera*.

670. PHILIPPI, F. Catálogo de los *Coleópteros* de Chile. An. Un. Chile, lxxi, pp. 1-190 (sep. copy).

Includes 2254 species. Special localities are given, as well as references and synonymy. The introduction is translated into German; Ent. Nachr. xiv, pp. 283-285.

671. PIAGET, E. Quelques nouvelles *Pédiculines*. Tijdschr. Ent. xxxi, pp. 147-164, pls. iii & iv. [*Neuroptera*.]

672. PIEPERS, M. C. Ueber die Entwicklungsgeschichte einiger Javanischen *Papilioniden*-Raupen. T. c. pp. 339-358, pls. vii & viii. [*Lepidoptera*.]

PIUTTI, A. [See LUCIANI (531, 532).]

673. PLANTA, A. VON. Sur la patée nutritive des Abeilles. Zeit. f. Phys. Chemie, xii, p. 327.

Summary in Arch. Z. expér. (2) vi, pp. xiii-xvi.

674. PLATEAU, F. Recherches expérimentales sur la vision chez les Arthropodes (troisième partie). A. Vision chez les Chenilles. B. Rôle des ocelles frontaux chez les Insectes parfaits. Bull. Ac. Belg. xv, pp. 28-91.

Parts 1 & 2 were devoted to vision in *Myriopoda* [cf. Zool. Rec. xxiv, Myr. p. 2] and *Arachnida* [cf. Zool. Rec. xxiv, Arachn. p. 1]. The perception of an object at a greater distance than $\frac{1}{2}$ to 2 centimètres—that is, about $\frac{1}{2}$ to $\frac{3}{4}$ of an inch—is very indistinct. [Cf. TIEBE (885).]

675. —. *Id.* (quatrième partie). Vision à l'aide des yeux composés. A. Résumé anatomo-physiologique. B. Expériences comparatives sur les insectes et sur les vertébrés. Mem. Cour. 8vo, xliii, pp. 3-91, pl.

These experiments were made in a room lighted at one end, and by means of a sort of maze or labyrinth and moveable obstacles.

676. —. *Id.* (cinquième partie). A. Perception des mouvements chez les Insectes. B. Addition aux recherches sur le vol des Insectes aveugles. C. Résumé général. Bull. Ac. Belg. xvi, pp. 395-457, pl. v.

The compound eye, he concludes, does not give a definite perception of form, and is inferior, from the functional point of view, to that of *Vertebrata*. Perception of movement exists; and, by the aid of a vivid sensibility to lights and shades, the Insect may be able to direct its movements. Noticed in J. R. Micr. Soc. 1889, p. 202.

677. PLATNER, G. Die erste Entwicklung befruchteter und parthenogenetischer Eier von *Liparis dispar*. Biol. Centrabl. viii, pp. 521-524.

678. POPPIUS, A. Ueber das Flügelgöider der finnischen *Dendrometriden*. B. E. Z. xxxii, pp. 17-28, pl. i. [*Lepidoptera*.]

A discussion of wing-neuration in *Geometridæ* in connection with Redtenbacher's views.

679. POUCHET, G. Sur la nature du test des Arthropodes. C.R. Soc. Biol. (8) v, pp. 685-688.

Homologies of parts of the external skeleton of Arthropods have not so high a value as homologies of the vertebrate skeleton.

680. POUJADE, G. A. Nouvelles espèces de *Piérade* et de *Noctuélide*. Bull. Soc. Ent. Fr. (6) viii, pp. xix & xx. [*Lepidoptera*.]

POULAIN, —. [See LORIFERNE & POULAIN (522).]

681. POULTON, E. B. Further experiments upon the protective value of colour and markings in Insects. Rep. Brit. Ass. 1887, pp. 763-765.

Relates to the paper recorded in Zool. Rec. xxiv, *Insecta*, Titles (578).

682. —. The secretion of pure aqueous formic acid by *Lepidopterous* larva for the purpose of defence. T. c. pp. 765 & 766.

Includes analysis of the secretion, and particulars as to the rate of its production.

683. —. Notes in 1887 upon *Lepidopterous* larvæ, &c., including a complete account of the life-history of the larvæ of *Sphinx convolvuli* and *Agria tau*. Tr. E. Soc. 1888, pp. 515-606, pls. xv-xvii.

Contents:—1. The ontogeny of *Sphinx convolvuli*. 2. The ontogeny of *Agria tau*. 3. The natural position of the *Sphingide*. 4. The cause and meaning of the Sphinx-like attitude. 5. The graphic method of representing the growth of lepidopterous larvæ. 6. The means of defence adopted by the larva of *Stauropus fagi*. 7. The meaning of the black colour of the eggs of *Paniscus cephalotes*. 8. The defensive value of "Tussocks," and the associated black intersegmental markings. 9. The meaning of the peculiar method of progression in the larvæ of *Cochliopodida*. 10. The protective resemblances of the larvæ of *Geometra papilionaria*. 11. A proof of the protective value of dimorphism in larvæ. 12. The protective resemblance of the pupa of *Apatura iris*. 13. The defensive secretion of the larvæ of *Cræsus varus*. 14. The geometric form, structure, and attitudes of the larva of *Euclidia mi*. 15. The determination of sex in certain living lepidopterous larvæ. Noticed in J. R. Micr. Soc. 1889, p. 206.

684. *PREISS, P. Abbildungen ansehnlicher Vertreter der exotischen Nachschmetterlinge. Coblenz. [*Lepidoptera*. Cf. Soc. Ent. iii, p. 61.]

PRINCE, H. [See OLLIFF & PRINCE (637).]

685. PROVANCHER, L. Petite faune entomologique du Canada. Cinquième ordre. Les *Hémiptères*, pp. 185-204.

686. —. Additions à la faune *hyménoptérologique*, pp. 273-440.

This includes several new species from Trinidad.

687. PRYER, H. *Rhopalocera Nihonica*. Part II. Yokohama: 1888, pp. 13-26, pls. iv-vi.
688. PÜNGELER, R. Einige neue europäische Spanner. *S. E. Z.* xlix, pp. 348-351. [*Lepidoptera*.]
689. PUTON, A. *Hémiptères nouveaux ou peu connus, et notes diverses*. *Rev. d'Ent.* vii, pp. 103-110.
690. —. Un genre nouveau d'*Hémiptères* et notes diverses. *T. c.* pp. 255-257.
691. —. Descriptions de six espèces nouvelles d'*Hémiptères*. *T. c.* pp. 362-368.
692. —. Réponse aux critiques de M. le Dr. Bergroth, et aperçu sur la classification des *Hémiptères* de Schiødte. *T. c.* pp. 18-23.
Includes some remarks on nomenclature. Bergroth makes further comments, *t. c.* p. 70.
693. —. Description d'un *Longicorne* nouveau. *T. c.* p. 23. [*Coleoptera*.]
694. QUEDENFELDT, G. Beiträge zur Kenntniss der *Koleopteren*-Fauna von Central-Afrika nach den Ergebnissen der Lieutenant Wissmanns'chen Kassai-Expedition 1883 bis 1886. *B. E. Z.* xxxii, pp. 155-219.
Enumerates 229 species, many of them new.
695. —. Verzeichniss der von Herrn Major A. D. von Mechow in Angola und am Quango-Strom 1878-1881 gesammelten *Curculioniden* und *Brenthiden*. *T. c.* pp. 271-308, pl. vi. [*Coleoptera*.]
696. —. Zwei neue africanische Arten der Gattung *Pseudotrochalus*. *Ent. Nachr.* xiv, pp. 194-196. [*Coleoptera*.]
697. RABAUD, E. La Cigale: quelques lignes de l'histoire des sciences. *Le Nat.* (2) i, pp. 204-206.
Elementary.
698. —. Les antennes des *Lépidoptères*. *T. c.* pp. 11 & 22, woodcuts.
Elementary.
699. RADOSZKOWSKI, —. Etudes hyménoptérogiques. *Hor. Ent. Ross.* xxii, pp. 315-337, pls. xii-xv.
Consists of descriptions and figures of the male organs in several genera of *Aculeata*, and descriptions of new species.
700. —. Faune Hyménoptérologique Transcaspienne. *T. c.* pp. 338-349.
701. —. Révision des armures copulatrices des mâles de la famille *Pompilidae*. *Bull. Mosc.* 1888, pp. 462-493, pls. xii-xv. [*Hymenoptera*.]
Includes also descriptions of many new species.
702. RAGONOT, E. L. Nouveaux genres et espèces de *Phycitidae* et *Galleriidae*. Paris: 1888, 52 pp. [*Lepidoptera*.]

703. [RAGONOT, E. L.] Diagnoses of N. American *Phycitidæ* and *Galleriidæ*. Paris : December, 1887, 20 pp. [*Lepidoptera*.]

Being occupied with a monograph of this family, he publishes these preliminary diagnoses, as he finds himself hampered by the descriptions being published by Hulst. The preface bears date December, 1887, and the memoir is no doubt anterior to that of Hulst (406) on the same subject.

704. —. Descriptions de genres nouveaux et espèces nouvelles de *Lépidoptères*. Deuxième partie. Ann. Soc. Ent. Fr. (6) viii, pp. 275-284.

705. —. Nouvelle espèce de *Microlépidoptère*. Bull. Soc. Ent. Fr. (6) viii, p. lxxxviii.

706. —. Diagnoses de cinq espèces nouvelles de *Microlépidoptères*. T. c. pp. cxxxviii-cxl.

707. —. Descriptions de six nouvelles espèces d'*Epipaschiidæ* du nord de l'Amerique. T. c. pp. cl-clii. [*Lepidoptera*.]

708. RAGUSA, E. *Coleotteri nuovi o poco conosciuti della Sicilia*. (Continued.) Nat. Sicil. viii, pp. 11 & 36.

709. RAMÓN Y CAJAL, S. Observations sur la texture des fibres musculaires des pattes et des ailes des insectes. Intern. J. Anat. Hist. v, pp. 205-232 & 253-276, pls. xix-xxii.

710. RAMÍREZ, J. Las semillas brincadoras. Apuntes relativos à la *Carpocapsa saltitans* y a las Euforbias en que vive. La Naturaleza (2) i, pp. 54-59, pl. vii, part. [*Lepidoptera*.]

711. RASCHKE, W. Entgegnung auf Herrn Fr. Meinert's Protest. Zool. Anz. xi, pp. 562-564. [*Diptera*.]

Cf. MEINERT (578).

712. RATH, O. VON. Ueber die Hautsinnesorgane der Insekten. Z. wiss. Zool. xlv, pp. 413-454, pls. xxx & xxxi.

Refers to the antennæ and palpi of Insects of most of the orders, and describes the nerve-endings as well as the modified hairs: the former are not sufficiently varied to throw any light on function. Summary in J. R. Micr. Soc. 1888, p. 569.

713. RÄTZER, A. Nachträge zur Fauna coleopt. Helvetiæ. MT. schw. ent. Ges. viii, pp. 20-42.

A list of several hundred species.

714. RAULIN & SICARD. De la soie du *Bombyx mori* dans l'intérieur de l'organisme. Ann. Soc. Agric. Lyon, x, pp. 319-324.

715. REDTENBACHER, J. Ein Beitrag zur Entwicklung des Flügelgeädters der Insekten. Zool. Anz. xi, pp. 443-447.

Throws some doubts on Adolph's views, and considers the wing-veins as tracheæ in an altered condition.

716. REED, E. C. Catalogo de los Insectos *Dipteros* de Chile. An. Un. Chile, lxxiii, pp. v & 46 (sep. copy).

Includes 716 species.

717. REES, J. VAN. Beiträge zur Kenntniss der inneren Metamorphose von *Musca vomitoria*. Zool. Jahrb. iii, Abth. Anat. pp. 1-34, pls. i & ii.
718. RÉGIMBART, M. Viaggio di L. Fea in Birmania e regioni vicine. x. *Dytiscidæ* et *Gyrinidæ*. Ann. Mus. Genov. (2) vi, pp. 609-623. [*Coleoptera*.]
719. —. Voyage de M. E. Simon au Venezuela. *Coléoptères. Dytiscidæ* et *Gyrinidæ*. Ann. Soc. Ent. Fr. (6) viii, pp. 379-387.
720. —. Descriptions de *Dytiscides* nouveaux de l'Amérique du Sud. T. c. pp. 388-392. [*Coleoptera*.]
721. REGNARD, P. Sur la qualité de l'air contenu dans les cocons de vers-à-soie. C.R. Soc. Biol. (8) v, pp. 787 & 788.
722. REITTER, E. Ueber als Adjectivum gebildete Gattungsnamen. Wien. ent. Z. vii, pp. 106-108.
723. —. Einiges über den Werth mehrerer *Coleopteren*-Gattungen und über deren Prioritäts-Berechtigungen. Deutsche e. Z. xxxii, pp. 97-109.
724. —. Neue *Coleopteren* aus Europa, den angrenzenden Ländern und Sibirien, mit Bemerkungen über bekannte Arten. Fünfter Theil. T. c. pp. 417-432.
725. —. Neue, von Herrn Lothar Hetschko um Blumenau im südlichen Brasilien gesammelte *Pselaphiden*. T. c. pp. 225-259. [*Coleoptera*.]
726. —. Ueber einige mit *Pimelia* nahe verwandte *Coleopteren*-Gattungen. T. c. pp. 329-331. [*Coleoptera*.]
727. —. *Coleopteren* aus Circassien, gesammelt von Hans Leder im Jahre 1887. Theil I-IX. Wien. ent. Z. vii, pp. 19, &c.
728. —. Coleopterologische Notizen. xxviii-xxx. T. c. pp. 41, 104, & 133.
729. —. Vier neue *Coleopteren*. T. c. pp. 68-71.
730. —. Uebersicht der Arten der *Coleopteren*-gattung *Alexia*, Steph., aus Europas und den angrenzenden Ländern. T. c. pp. 322-326.
731. —. Bestimmungs Tabellen der europäischen *Coleopteren*: enthaltend die Familien *Erotylidae* und *Cryptophagidae*. Verh. Ver. Brünn. xxvi, Abh. pp. 1-55.
- This was recorded in its separate form last year.
732. —. Uebersicht der Arten der *Coleopteren*-Gattung *Phyllopertha*, Kirby, aus Europa, den angrenzenden Ländern Sibirien mit Central-Asien. Ent. Nachr. xiv, pp. 289-294.
733. —. Bemerkungen zu der Arbeit "Ueber *Pselaphiden* und *Scydmaniden* des königl. zoologischen Museums zu Berlin von Dr. Schauffuss." B. E. Z. xxxii, pp. 465-482. [*Coleoptera*.]
734. RETOWSKI, O. Beitrag zur *Orthopteren*-Kunde der Krim. Bull. Mosc. 1888, pp. 402-415.

735. REUTER, E. Über der "Basalfleck" auf den Palpen der Schmetterlinge. Zool. Anz. xi, pp. 500-503. [*Lepidoptera*.]

Summary in J. R. Micr. Soc. 1888, p. 943.

736. REUTER, O. M. Revisio synonymica *Hétéroptérorum* palæarcticorum quæ descripserunt auctores vetustiores (Linnæus, 1758—Latreille, 1806). I, Act. Soc. Fenn. xv, pp. 243-313; II, t. c. pp. 443-812. [*Rhynchota*.]

This extensive synonymical work is prefaced by a discussion on nomenclature.

737. —. Nya rön om Myrornas omtvistade medlidande och hjälpsamhet. Ent. Tidskr. ix, pp. 55-90. Résumé in French, pp. 91-95. [*Hymenoptera*.]

Interesting observations on the habits and manners of *Formica rufa*.

738. —. *Calocoris costæ*, n. sp. Wien. ent. Z. vii, pp. 99 & 100. [*Rhynchota*.]

739. —. *Heteroptera nova* in Græcia a Do. E. v. Oertzen lecta. Rev. d'Ent. vii, pp. 223-228. [*Rhynchota*.]

740. —. *Hemiptera sinensia* enumeravit ac novas species descripsit. T. c. pp. 63-69.

741. —. Description d'une nouvelle espèce du genre *Dicyphus*, Fieb., Reut. Notes sur quelques *Capsides* de la Dobroudja. T. c. pp. 61-63. [*Rhynchota*.]

742. —. Notes additionnelles sur les *Hémiptères-Hétéroptères* des environs de Gorice (Illyrie). T. c. pp. 57-69.

743. —. Descriptio speciei novæ sicilianæ generis *Plagiognathus* (*Hemiptera, Capsidæ*). Nat. Sicil. vii, p. 236.

744. —. Nya Tillägg till Professor Schiödtes "Fortegnelse over de i Danmark levende Tæger." Ent. Med. p. 101. [*Rhynchota*.]

Includes synonymical and diagnostic remarks, as well as one new species.

745. —. Några ord om Hydrometridernas öfvervintring. T. c. pp. 123 & 124. [*Rhynchota*.]

— [See also AUTRAN (34).]

746. REY, CL. Description d'une espèce d'*Homalium* nouvelle. Bull. Soc. Ent. Fr. (6) viii, p. cxix. [*Coleoptera*.]

747. —. Description d'une nouvelle espèce d'*Aphodius* de la faune française. T. c. p. cxc. [*Coleoptera*.]

748. —. Notes sur quelques *Hémiptères* et descriptions d'espèces nouvelles ou peu connues. Rev. d'Ent. vii, pp. 91-103.

749. —. Notes sur quelques *Hémiptères-Hétéroptères* et descriptions d'espèces nouvelles ou peu connues. T. c. pp. 189-198.

750. RICHARDSON, N. M. Description of a species of *Epischnia* (*bank-siella*), new to science, from Portland. Ent. M. M. xxv, p. 63. [*Lepidoptera*.]

751. RIESEN, A. Lepidopterologische Mittheilungen aus Ostpreussen. S. E. Z. xlix, pp. 233-238.

These notes are chiefly of local interest.

752. RIGGIO, G. Appunti e note di ortoterologia siciliana. II. Sopra alcune specie critiche o nuove per la Sicilia; Nat. Sicil. iii, pp. 95-110. III. Sopra una nuova specie di *Gryllodes* della Sicilia e considerazioni su questo genere; t. c. pp. 110-113. IV. Sopra due *Locustarii* nuovi per la Sicilia; t. c. pp. 308-311, and *op. cit.* iv, pp. 67-71. [*Orthoptera*.]

753. —, & DE STEFANI-PEREZ, T. Sopra alcuni *Imenotteri* dell' Isola di Ustica. *Op. cit.* vii, pp. 145-150.

754. RILEY, C. V. Report of the Entomologist for the year 1887. From the Annual Report of the Department of Agriculture for the year 1887. Washington: 1888, pp. vi & 48-179, 8 pls.

The most important of the contents are the Chinch-bug, by Howard (this has also been published in separate form with different pagination, cf. HOWARD); the Codling-moth, also by Howard; and a report on silk culture, by P. Walker.

755. —. The Hessian Fly an imported Insect. Canad. Ent. xx, pp. 121-128.

756. —. Notes on N. American *Psyllida*. P. Biol. Soc. Wash. ii, pp. 67-79. [*Elmynota*.]

Seen by the Recorder only this year, though published in 1885.

757. —. The problem of the Hop-plant Louse (*Phorodon humuli*) in Europe and America. Rep. Brit. Ass. 1887, pp. 750-753.

758. —. On the luminous larviform females in the *Phengodini*. T. c. p. 760. [*Coleoptera*.]

759. —. The parsnip Web-worm. Ins. Life, i, pp. 94-98, fig. 13. [*Lepidoptera*.]

760. —. Lady-bird parasite. T. c. pp. 101-104, figs. 14 & 15.

761. —. Some recent entomological matters of international concern. T. c. pp. 126-137, figs. 24-33.

Relates to *Icerya purchasi*, *Cecidomyia destructor*, and *Phorodon humuli*.

762. —. The habits of *Thalessa* and *Tremex*. T. c. pp. 168-179, pl. i, and figs. 36-39. [*Hymenoptera*.]

763. RILEY & HOWARD. A Sandwich Island Sugar-cane borer. T. c. pp. 185-189, figs. 44 & 45. [*Coleoptera*.]

764. RITSEMA, C. Description of a new species of the *Buprestid* genus *Endelus*, H. Deyr. Notes Leyd. Mus. x, p. 175. [*Coleoptera*.]

765. —. Description of two new species of the *Longicorn* group *Callichromini*. T. c. pp. 193-197. [*Coleoptera*.]

766. —. On five new species and two insufficiently known species of the *Longicorn* genus *Pachytaria*. T. c. pp. 177-192.

767. [RITSEMA, C.] Description of a new species of the *Longicorn* genus *Bacchisa*, Pasc. *T. c.* p. 253. [*Coleoptera*.]
768. —. Description of three new species of the *Longicorn* group *Agnini*. *T. c.* pp. 201–206. [*Coleoptera*.]
769. —. Lijst der entomologische Geschriften van Mr. J. W. van Lansberge, gevolgd door eene opgave der daarin beschreven nieuwe geslachten, ondergeslachten en soorten. *Tijdschr. Ent.* xxxi, pp. 201–234.
770. RÖBER, J. Ueber die Berechtigung einiger *Glaucopis*-Arten. *CB. Iris*, i, pp. 338–340. [*Lepidoptera*.]
771. —. Zwei neue *Ornithopteren*. *Ent. Nachr.* xiv, pp. 369 & 370. [*Lepidoptera*.]
— [See also SCHATZ & RÖBER (793).]
772. RÖDER, H. VON. Ueber *Dinera cristata*, Mg., und verwandte Arten. *SB. Ges. Dorp.* viii, pp. 227–233. [*Diptera*.]
773. —. Ueber die Gattung *Hammerschmidtia*, Schum. *Z. Ent. Bresl.* (2) xiii, pp. 1–3. [*Diptera*.]
774. —. Dipterologische Beiträge. *Wien. ent. Z.* vii, pp. 95 & 96.
775. —. Bemerkungen zur *Dipteren*-Gattung *Ecoprosopa*. *T. c.* pp. 97 & 98.
776. ROGENHOFFER, A. F. *Pedoptila staudingeri*, n. sp. *SB. z.-b. Wien*, xxxviii, p. 61. [*Lepidoptera*.]
777. ROSTER, A. Contributo allo studio delle forme larvali degli *Odonati*. Censo iconografico delle larve-ninfe dei Caudobranchiati. *Bull. Ent. Ital* xx, pp. 159–170, pls. i–iv. [*Neuroptera*.]
778. ROSTOCK, M. *Neuroptera germanica*. Die Netzflügler Deutschlands, mit Berücksichtigung auch einiger ausserdeutschen Arten nach der analytischen Methode unter Mitwirkung von H. Kolbe bearbeitet. *J. Ber. Ver. Zwickau*, 1887, pp. 1–198, pls. i–x.
779. ROYSTON-PIGGOTT. Notes on Villi on the scales of Butterflies and Moths. *J. Quek. Club* (2) iii, pp. 205–207.
780. RUDOW, F. Einige neue *Ichneumoniden*. *Ent. Nachr.* xiv, pp. 83–92, 120–124, & 129–136. [*Hymenoptera*.]
Severely criticized by KRIECHBAUMER, *t. c.* pp. 249–252.
781. —. Einige Beobachtungen an *Odonaten* und *Neuropteren*. *Soc. Ent.* iii, pp. 124, &c.
782. RÜHL, F. Die Kennzeichen der männlichen und weiblichen *Lepidopteren* Puppen. *Op. cit.* ii, p. 185 ; iii, p. 5.
783. —. Zur Kenntniss der Familie *Psyche* (sic). Fortsetzung. *Op. cit.* ii, pp. 154, &c. ; iii, p. 11. [*Lepidoptera*.]
784. —. Ueber den Misserfolg bei der Copula an *Lepidopteren*. *T. c.* p. 18.
785. —. Zum Genus *Zygæna*. *T. c.* pp. 50, &c. [*Lepidoptera*.]

786. RULAND, F. Beiträge zur Kenntniss der antennalen Sinnesorgane der Insekten. Z. wiss. Zool. xvi, pp. 602-628, pl. xxxvii.

He considers the cones to be organs of smell, and he detected them in all Insects examined. A large part of the structures found on the antennæ are taste-organs. The pore-plates are not modified hairs, but special organs devoted to hearing. There are no glandular structures on the antennæ. Summary, J. R. Micr. Soc. 1888, pp. 723 & 724.

787. SALVIN, O. A note on *Ornithoptera victoriae*, Gray. P. Z. S. 1888, pp. 116-119, pl. iv. [*Lepidoptera*.]

— [See also GODMAN & SALVIN (319, &c.).]

788. SAULCY, F. Notice sur le genre *Tetrix*, Latr. Bull. Soc. Ent. Fr. (6) viii, p. cxxxv.

789. SAUNDERS, E. Notes on Dr. Hermann Müllers' "Fertilisation of Flowers." Ent. M. M. xxiv, pp. 252-254.

790. —. Index to Panzer's Fauna Insectorum Germaniæ. London: 1888, 48 pp.

791. SAUSSURE, H. DE. I. Synopsis de la Tribu des *Sagiens*, *Orthoptères* de la famille des *Locustides*. II. De quelques *Orthoptères*, *Pamphagiens* du genre *Xiphocera*. Ann. Soc. Ent. Fr. (6) viii, pp. 127-159, pl. v.

792. —. Additamenta ad prodromum *Ælipodiorum*. Mem. Soc. Phys. Genève. xxx, No. 1, pp. 1-180, pl. ii. [*Orthoptera*.]

This work includes a large number of new genera and species, a sketch of the geographical distribution, and a synoptical table of all the genera of the group.

793. SCHATZ, E., & RÖBER, J. Exotische Schmetterlinge. II. Theil, die Familien und Gattungen der Tagfalter systematisch und analytisch bearbeitet. Fürth (Bavaria). [*Lepidoptera*.]

Part 4 has appeared in 1888; it treats of *Nymphalidæ*.

794. SCHAUFUSS, C. Catalogus synonymicus *Pselaphidarum* adhuc descriptorum. Tijdschr. Ent. xxxi, pp. 1-104. [*Coleoptera*.]

795. SCHAUFUSS, L. W. Einige Käfer aus dem baltischen Bernsteine. B. E. Z. xxxii, pp. 266-270. [*ulviro-entomology*.]

796. —. Ein neuer *Edichirus*. Ent. Nachr. xiv, p. 314. [*Coleoptera*.]

797. SCHILSKY, J. Systematisches Verzeichniss der Käfer Deutschlands, mit besonderer Berücksichtigung ihrer geographischen Verbreitung. Zugleich ein Käfer-Verzeichniss der Mark Brandenburg. Berlin: 1888, pp. vi & 159.

798. —. Beitrag zur Kenntniss der deutschen Käferfauna. Deutsche E. Z. xxxii, pp. 177-190. [*Coleoptera*.]

Descriptions of 119 named varieties, mostly of colour. They are not recorded in our "Systematic" part.

799. —. Beiträge zur Käferfauna Deutschlands. III. Th. pp. 125-128.

Remarks on characters and synonymy, as well as localities.

800. [SCHILSKY, J.] Vierter Beitrag zur Kenntniss der deutschen Käferfauna. Die deutschen *Aphodius*-Varietäten. *T. c.* pp. 305-321. [*Coleoptera*.]
801. °SCHIMPER, A. F. W. Die Wechselbeziehungen zwischen Pflanzen und Ameisen im tropischen Amerika. Heft 1. Jena: 95 pp., 3 pls. Cf. (533) & Ent. Nachr. xiv, pp. 269-271.
802. SCHLECHTENDAL, D. VON. Mittheilungen über die in der Sammlung aufbewahrten Originale zu Germar's: "Insekten in Bernstein eingeschlossen" mit Rücksicht auf Giebel's "Fauna der Vorwelt." *Z. Naturw.* xli, pp. 473-491.
803. —. Ueber das Vorkommen von phytophagen Schlupfwespen. *T. c.* pp. 415-418. [*Hymenoptera*.]
804. SCHMIDT, J. Neue *Histeriden*. *Hor. Ent. Ross.* xxii, pp. 189-191. [*Coleoptera*.]
805. —. Drei neue *Heterius*. *Ent. Nachr.* xiv, pp. 236-239. [*Coleoptera*.]
806. —. Bemerkung über zwei *Histeriden*. *Notes Leyd. Mus.* x, pp. 121 & 122. [*Coleoptera*.]
807. SCHMIEDEKNECHT, O. Die europäischen Gattungen der Schlupfwespenfamilie *Pimplariæ*. *Zool. Jahrb.* iii, Syst. Abth. pp. 419-444. [*Hymenoptera*.]
808. —. Monographische Bearbeitung der Gattung *Pimpla*. *T. c.* pp. 445-542. [*Hymenoptera*.]
809. SCHNABL, J. Contributions à la faune diptérologique. *Hor. Ent. Ross.* xxii, pp. 378-486.
Limited to *Aricia*. Includes new species, descriptions of other species not included in his "Contributions," and additional characters for some described already in the latter memoir.
810. —. Quelques mots sur l'utilité de l'extirpation de l'organe copulateur dans la famille des *Anthomyides* pour la diagnostique. *T. c.* pp. 181-186. [*Diptera*.]
811. —. *Alloeostylus*, nov. gen. *Anthomyidarum*. *Ent. Nachr.* xiv, pp. 49 & 82. [*Diptera*.]
812. —. *Hera*, nov. gen. *Anthomyidarum*. *T. c.* pp. 113-120. [*Diptera*.]
813. SCHÖNFELDT, H. VON. Eine neue *Donacia* aus Japan. *T. c.* p. 33. [*Coleoptera*.]
814. —. *Stenelmis foreicollis* ein neuer japanischer Käfer. *T. c.* p. 193. [*Coleoptera*.]
815. —. *Cryptodactylus gracilis*, n. sp., ein neuer japanischer Käfer. *T. c.* p. 209. [*Coleoptera*.]
816. SCHÖYEN, W. M. Supplement til H. Siebke's Enumeratio Insectorum Norvegorum. Fasc. v. Pars. I (*Hymenoptera*, *Phytophaga* et *Aculeata*). *Forh. Selsk. Chr.* 1887, No. 5, pp. 1-11.

817. [SCHÖYEN, W. M.] Yderligere Tillæg til Norges *Lepidopter*-fauna. *Op. cit.* No. 3, pp. 1-32.

818. —. Fortegnelse over de i Norge hidtil observerede *Neuroptera Planipennia* og *Pseudo-Neuroptera*. *Op. cit.* No. 13, pp. 1-30.

819. SCHWARZ, E. A. The Insect Fauna of Semi-tropical Florida, with special regard to the *Coleoptera*. *Ent. Am.* iv, pp. 165-175.

Particulars as to the existence of a West Indian flora and fauna in certain spots.

820. SCUDDER, S. H. The Butterflies of the Eastern United States and Canada, with special reference to New England. Cambridge, Mass.

The work is to consist of twelve parts, of which two have been issued up to Dec., 1888, comprising 88 pp. of Introduction, and pp. 105-304 of the Systematic Part, and several plates and maps. The Introduction contains :—I. The general structure of Butterflies. II. The modern classification of Butterflies historically considered. III. The physical features and faunistic divisions of New England. The Systematic Part is varied by digressive essays, under the name of "Excursus"; these at present published are :—I. The White Mountains of New Hampshire as a home for Butterflies (pp. 127-134). II. The clothing of Caterpillars (pp. 161-163). III. The general changes in a Butterfly's life and form (pp. 178-180). IV. The eggs of Butterflies (pp. 190-192). V. The modes of suspension of Caterpillars (pp. 201-203). VI. The geographical distribution of Butterflies (pp. 211-213). VII. The ancestry of Butterflies; the primæval form (pp. 235-240). VIII. The means employed by Butterflies of the genus *Basilarchia* for the perpetuation of the species (pp. 260-266). In the Systematic Part he adopts a division into four families: *Nymphalidæ*, *Lycenidæ*, *Papilionidæ*, and *Hesperiidæ*. Separate systematic tables are given, based on egg, young caterpillar, mature caterpillar, chrysalis, and imago. The references to the plates in our record are taken from the letterpress; some of the figures have not yet appeared. Reviewed in *Nature*, xxxix, p. 193, by ELWES.

821. —. The natural history of *Anosia plexippus* in New England. *Psyche*, v, pp. 62-66. [*Lepidoptera*.]

822. —. The means employed by Butterflies of the genus *Basilarchia* for the perpetuation of the species. *T. c.* pp. 79-85. [*Lepidoptera*.]

823. —. The arrangement of the New England species of *Thanaos*. *T. c.* pp. 86-88. [*Lepidoptera*.]

824. SEIDLITZ, G. Ueber unzulässige Gattungsnamen. *Wien. ent. Z.* vii, pp. 39-41.

Relates to the use of generic names formed from Latin, and the use of generic names as specific names.

825. —. Zur Abwehr. *Deutsche c. Z.* xxxii, pp. 168-172, 301, & 302. [*Coleoptera*.]

Discusses, in opposition to Reitter, some points of nomenclature, &c., in *Silphidæ* and *Seydmanidæ*.

826. [SEIDLITZ, G.] *Fauna baltica*. [*Coleoptera*.]

Pp. xli-xlvi, Familien, pp. 17-80, Gattungen, and pp. 97-336, Arten, have appeared in 1888. A great many synonymical and critical observations are given in the form of foot-notes.

827. —. *Fauna Transsylvanica*. Die Käfer Siebenbürgens. [*Coleoptera*.]

This is a reprint of the *Fauna baltica*, with the alterations necessitated by the differences in the two faunæ. Lieferungen I and II have appeared in 1888, and are noticed at length in Ent. Nachr. xiv, pp. 221-224.

828. SELYS-LONGCHAMPS, E. DE. *Odonates recueillis aux îles Loo-Choo* par feu M. Pryer. O.R. ent. Belg. xxxii, pp. xlviii-lviii. [*Neuroptera*.]

829. —. Catalogue raisonné des *Orthoptères* et des *Neuroptères* de Belgique. Ann. Ent. Belg. xxxii, pp. 103-203.

Includes a sketch of the classification of *Neuroptera*. The number of species of *Orthoptera* is 47; of *Neuroptera*, 327.

830. SÉMENOW, A. Notes, synonymiques et systématiques sur diverses espèces du genre *Carabus*, L. Hor. Ent. Ross. xxii, pp. 207-212. [*Coleoptera*.]

831. —. Notice sur les *Chlénien*s de la région Transcaspienne. T. c. pp. 213-223. [*Coleoptera*.]

832. —. Vorläufige Diagnosen zwei neuer *Prionus*-Arten. Wien. ent. Z. vii, pp. 157 & 158. [*Coleoptera*]

833. —. Zwei neue *Coleopteren* aus Central-Asien. T. c. pp. 246-248.

834. SEMPER, G. Reisen in Archipel der Philippinen von Dr. C. Semper. Die Tagfalter. [*Lepidoptera*.]

Part III of the Butterflies has appeared in 1888, including pp. 87-134, and pls. xvii-xxiv.

835. SHARP, D. Descriptions of some new *Coleoptera* from Japan. Ann. N. H. (6) ii, pp. 242-245.

836. —. The *Staphylinidæ* of Japan. T. c. pp. 277-295, 369-387, & 451-464. [*Coleoptera*.]

Preceded by some remarks on geographical distribution. Brings the number of species of the family from the Archipelago up to 467.

— [See also GODMAN & SALVIN (319).]

837. SHIPLEY, A. E. Insects injurious to wheat. Encycl. Brit. 9th ed. xxiv, pp. 534-536.

838. —. Diseases of vines. T. c. pp. 238-240.

Relates chiefly to *Phylloxera*.

839. —. Wasps. T. c. pp. 391-393. [*Hymenoptera*.]

SICARD. [See also RAULIN (714).]

840. SIGNORET, —. *Hémiptères*. Miss. sci. Cap Horn. vi, pp. 1-7.

The two descriptions of new species appeared previously in Ann. Soc. Ent. Fr. 1885.

841. SKUSE, A. A. *Diptera of Australia*. Part I, pp. 17-145, pls. i & ii; Part II, pp. 657-726, pl. xi; Part III, pp. 1123-1222, pls. xxxi & xxxii. P. Linn. Soc. N.S.W. (2) iii.

A very large number of new species are described, and a great deal of miscellaneous information is given, in order to render the work an introduction for the benefit of Australian Students. Part I relates to *Cecidomyiidae*; Part II to *Sciaridae*; Part III to *Mycetophilidae*.

842. SKUSE, F. A. A. Notes on a new *Dipterous* Insect belonging to the family *Cecidomyiidae* infesting grass; also on two *Hymenopterous* Insects parasitic upon the former. *Op. cit.* ii, pp. 1071-1073.

843. SIMMONS, W. J. A contribution to the study of the Mango Weevil. J. Ag. Soc. Ind. (n.s.) viii, pp. 261-277. [*Coleoptera*.]

844. SENTENIS, F. Ueber den Begriff der Art. SB. Ges. Dorp. viii, pp. 270-275.

845. —. Die livländischen *Trypetinen*, pp. 198-211; die I. *Tetano-cerinen*, *Ortalin*en, *Platystomin*en und *Ulidin*en, pp. 219-226; die I. *Sapromysinen*, pp. 266-269; die I. *Tipuliden* und *Dixa*, pp. 393-398. *T. c.* [*Diptera*.]

846. SLOANE, T. G. A note on the *Carenides*, with descriptions of new species. P. Linn. Soc. N.S.W. (2) iii, pp. 1101-1122. [*Coleoptera*.]

Tabulates the genera and subgenera, and describes 13 new species and 3 new subgenera.

847. SMITH, T. F. On the structure of Butterfly and Moth Scales. J. Quek. Club (2) iii, pp. 199 & 200.

848. SMITH, J. B. A monograph of the *Sphingidae* of America, north of Mexico. Tr. Am. Ent. Soc. xv, pp. 49-242, pls. iv-xiii. [*Lepidoptera*.]

Noticed by FERNALD, in Ent. Am. iv, pp. 177 & 178.

849. —. An introduction to a classification of the N. American *Lepidoptera*. Ent. Am. iv, pp. 9-13, 27, & 28.

Notes on the genera of *Sesiidae*, *Thyrididae*, *Heterogynidae*.

850. —. List of the *Sphingide* of temperate N. America. *T. c.* pp. 89-94. [*Lepidoptera*.]

851. —. Notes on *Cydosia* and *Cerathosia*. P. U. S. Nat. Mus. xi, pp. 185-190. [*Lepidoptera*.]

852. —. New species of *Oncocnemis*. Ins. Life, i, pp. 18-21. [*Lepidoptera*.]

853. —. Notes on *Lachnosterna fusca*, auct. *T. c.* pp. 180-185. [*Coleoptera*.]

854. SMITH, H. G., & KIRBY, W. F. *Rhopalocera Exotica*; being illustrations of new, rare, or unfigured species of Butterflies. Parts iii-vi.

The species included in these parts have all been recently described elsewhere.

855. SNELLEN, P. C. T. Bijdrage tot de kennis van de *Aganuidea*, Herrich-Schäffer. (*Lepidoptera Heterocera*, Familie *Lithosina*.) Tijdschr. Ent. xxxi, pp. 109-146, pls. i & ii.
856. SOUTH, R. Distribution of *Lepidoptera* in the outer Hebrides, Orkney, and Shetland. Ent. xxi, pp. 28-30, 98, & 99.
857. —. *Lepidoptera* of the outer Hebrides. T. c. pp. 25-27.
858. SPANNERT, A. Die wissenschaftlichen Benennungen der europäischen Grossschmetterlinge mit sämmtlichen anerkannten Varietäten und Aberrationen. Berlin: 1888, 239 pp.
Purely etymological.
859. SPEYER, A. Lepidopterologische Mittheilungen. S. E. Z. xlix, pp. 200-213.
860. STAINTON, H. T. The *Coleophora* of the *Potentilla*, which was originally found by Mr. W. C. Boyd. Ent. M. M. xxiv, p. 231.
861. —. *Nepticula serella*, n. sp. T. c. p. 260. [*Lepidoptera*.]
862. —. Description of a new *Nepticula* from beech. Op. cit. xxv, p. 12.
863. STANDFUSS, M. Alte und neue *Agrotiden* der europäischen Fauna. CB. Iris, i, pp. 211-219, pls. x & xi. [*Lepidoptera*.]
864. —. Lepidopterologisches. B. E. Z. xxxii, pp. 233-246, pl. iii.
865. STAUDINGER, O. *Lepidopteren* der Insel Palawan. T. c. pp. 273-280.
This part is devoted to *Papilioninae*.
866. —. Neue *Noctuiden* des Amurgebietes. S. E. Z. xlix, pp. 245-283. [*Lepidoptera*.]
867. —. Centralasiatische *Lepidopteren*. T. c. pp. 1-65.
Many new species and varieties of *Noctuidæ*.
868. —. Exotische Schmetterlinge. 1 Theil. Exotische Tagfalter. Fürth (Bavaria).
Pts. 20 and 21, completing this part of the work, have appeared in 1888.
- STEFANI, T. DE. [Vide DESTEFANI (182).]
869. STEIN, P. Einige neue *Anthomyiden*-arten. Wien. ent. Z. vii, pp. 289-292. [*Diptera*.]
870. —. Die *Tachininen* und *Anthomyinen* der Umgegend Genthe's. Ent. Nachr. xiv, pp. 211-219 & 370-379. [*Diptera*.]
871. STIERLIN, G. Beschreibung einiger neuen europäischen Rüsselkäfer. MT. schw. ent. Ges. viii, pp. 9-20. [*Coleoptera*.]
872. —. Beschreibung einiger neuen Käferarten. T. c. pp. 48-61. [*Coleoptera*.]
873. —. Uebersicht der in Europa und Syrien einheimischen Arten der Gattung *Alophus*. T. c. pp. 64-68. [*Coleoptera*.]

874. [STIERLIN, G.] Ueber das Schicksal der von Hrn. Prof. Oswald Heer beschriebenen neuen Käferarten. *T. c.* pp. 70-76. [*Coleoptera.*]

Only of interest in connection with Heer's works.

875. —. Ueber *Otiorrhynchus bicostatus* und *gemellatus*. *Deutsche z. Z.* xxxii, pp. 79 & 80. [*Coleoptera.*]

876. —. Ueber einen neuen europäischen Rüsselkäfer. *Soc. Ent.* iii, p. 97. [*Coleoptera.*]

—, [See also OERTZEN (631).]

877. SUCHETET, A. L'hybridité dans la Nature. *Rev. Quest. sci.* xxiv, pp. 175-244.

Pp. 180-187 relate to hybridism amongst Insects.

SWINHOE. [See COTES (170).]

878. TACZANOWSKI, L. Description d'une nouvelle espèce de Carabe du sous-genre *Coptolabrus*. *Hor. Ent. Ross.* xxii, pp. 187 & 188. [*Coleoptera.*]

879. TARGIONI-TOZZETTI, A. Cronaca entomologica dell'anno 1887 e dei mesi di gennaio e febbraio, 1888. *Bull. Ent. Ital.* xx, pp. 129-138.

Relates to injurious Insects in Italy, and gives particulars as to the spread of *Phylloxera*.

880. — & BERLESE, A. Intorno ad alcuni insetticidi, alle loro mescolanze ed alle attività relative di quelli e di queste contro gli insetti. *T. c.* pp. 148-158.

881. TCHENG-KI-TONG. La soie et le ver à soie en Chine. *La Nature*, xvi, pp. 172-174 & 267-270.

882. THAXTER, R. The *Entomophthoræ* of the United States. *Mem. Bost. Soc.* iv, pp. 133-201, pls. xiv-xxi.

Besides descriptions of the fungi, this includes a list of numerous Insects attacked by them; but specific names are rarely mentioned.

883. THOMSON, C. G. Opuscula entomologica, edidit. Fasciculus xii. Lund: 1888, pp. 1185-1318.

This fasciculus includes three memoirs, viz.:—XXXVI. Öfversigt af de i Sverige fauna arter af *Ophion* och *Paniscus*, pp. 1185-1201 [*Hymenoptera*]. XXXVII. Bidrag till Sveriges insect fauna, pp. 1202-1265 [*Coleoptera*, *Orthoptera*, *Lepidoptera*, *Hymenoptera*]. XXXVIII. Försök till gruppering af släktet *Plectiscus*, Grav., pp. 1266-1318. [*Hymenoptera*.]

884. —. Notes *Hyménoptérologiques*. Observations sur le genre *Phucamon* et descriptions de nouvelles espèces. No. III. *Ann. Soc. Ent. Fr.* (6) viii, pp. 105-126.

885. TIEBE, —. Plateau's Versuche über das Sehvermögen der einfachen Augen von Schmetterlingsraupen und von vollkommen Insekten. *Biol. Centralbl.* viii, pp. 276-282.

886. TRAIL, J. W. H. The gall-making *Diptera* of Scotland. Scot. Nat. 1888, pp. 281-288, 309-328, & 373.

The particulars are chiefly given under a botanical arrangement; but there is also a list, pp. 378-380, of the *Diptera* making the galls.

887. TROUËSSART, —, & NEUMANN, G. Le Pou de l'otaire. Le Nat. (2) ii, p. 80, woodcuts. [*Rhynchota* (*Anoplura*).]

888. TRYON, H. Notes on Queensland Ants. P. R. Soc. Queensl. ii, pp. 146-162. [*Hymenoptera*.]

889. —. Judicial entomology, and on an unrecorded habit of White Ants. *Op. cit.* iv, pp. 119-123. [*Neuroptera*.]

890. TSCHITSCHÉRINE, T. Insecta in itinere cl. N. Przewalskii in Asia centrali novissime lecta. v. *Pterostichini* Hor. Ent. Ross. xxii, pp. 362-367. [*Coleoptera*.]

891. TUTT, J. W. Melanism in London *Lepidoptera*. Ent. xxi, pp. 247-249.

892. —. Variation of certain *Agrotidæ*. *T. c.* pp. 171-176 & 198-202. [*Lepidoptera*.]

893. —. Contributions towards a list of the varieties of *Noctuæ* occurring in the British Isles. *T. c.* pp. 44-52, 81-87, 99-102, 135-139, 151-155, 176-181, 206-209, 221-229, 252-254, 269-272, 305-313, pl. i. [*Lepidoptera*.]

894. UHLER, P. R. Preliminary survey of the *Cicadææ* of the United States. Ent. Am. iv, pp. 21-23 & 81-85. [*Rhynchota*.]

895. URECH, F. Bestimmungen der successiven Gewichtsabnahme der Winterpuppe von *Pontia brassicæ*, und mechanisch-physiologische Betrachtungen darüber. Zool. Anz. xi, pp. 205-212.

896. VERRALL, G. H. A list of British *Diptera*. London: 1888, pp. 33 & 12.

Includes nearly 3000 species. Part II is a list of the species originally described from Britain, but probably unrecognizable unless from types. Part III. List of reputed British *Diptera*.

897. —. List of British *Tipulidæ*, &c., with notes. Ent. M. M. xxv, pp. 20-27 & 97-99. [*Diptera*.]

Continued from last year.

898. VENUS, C. E. Ueber Varietäten-Zucht. CB. Iris, i, pp. 209 & 210. [*Lepidoptera*.]

An experiment in rearing larvæ of *Vanessa urticæ* under great sun-heat.

899. VOELTZKOW, A. Vorläufige Mittheilung über die Entwicklung im Ei von *Musca vomitoria*. Zool. Anz. xi, pp. 235 & 236.

Summary in J. R. Micr. Soc. 1888, p. 572.

900. WACHTL, A. Vorläufige Beschreibung einer neuen Gallmücke. Wien. ent. Z. vii, pp. 205 & 206. [*Diptera*.]

901. [WACHTL, A.] Ein Lindenverwüster. Beitrag zur Kenntniß der ersten Stände und der Lebensweise des *Agrilus auricollis*, Kies. *T. c.* pp. 293-297, pl. iii. [*Coleoptera*.]
902. °WACHTL, F. *Tomicus austriacus*, n. sp. MT. Niederösterr. Forstvereines. 1887, 3, xxxi, p. 320. [*Coleoptera*.]
Cf. Wien. ent. Z. vii, p. 114.
903. WALKER, F. A. Oriental entomology. J. Viet. Inst. xxi, pp. 107-136.
904. WALKER, J. J. Carrion beetles attracted by *Arum dracuncul.* Ent. M. M. xxv, p. 33.
905. —. A year's Insect-hunting at Gibraltar. *Op. cit.* xxiv, pp. 175-184.
Cf. also *t. c.* p. 232.
906. WALLENGREN, H. D. J. Skandnaviens vecklarefjärilar. Ent. Tidskr. ix, pp. 159-198. [*Lepidoptera*.]
907. WALSINGHAM, LORD. Description of a new genus and species of *Pyralida*, received from the Rev. J. H. Hocking, from the Kangra Valley, Punjab. Tr. L. S. (2) v, pp. 47-52, pl. v. [*Lepidoptera*.]
908. —. Steps towards a revision of Chambers's Index, with notes and descriptions of new species. *Ins. Life*, i, pp. 81-84, 113-117, & 145-150. [*Lepidoptera*.]
909. —. On the variation of the apical veins in the genus *Cerostoma*, Latr., and its allies. Ent. M. M. xxv, pp. 153-156. [*Lepidoptera*.]
910. WARREN, W. On *Lepidoptera* collected by Major Yerbury in Western India, in 1886 and 1887. P. Z. S. 1888, pp. 292-338.
911. —. Concerning some of Haworth's types of British *Micro-Lepidoptera*. Ent. M. M. xxv, pp. 5-8.
912. WASMANN, E. Beiträge zur Lebensweise der Gattungen *Atemeles* und *Lomechusa*. Tijdschr. Ent. xxxi, pp. 245-328. [*Coleoptera*, *Hymenoptera*.]
913. WATERHOUSE, C. O. Memoir of George Robert Waterhouse. P. E. Soc. 1888, pp. lxx-lxxvi.
914. —. On some *Coleoptera* from Eastern Equatorial Africa, received from Emin Pasha. P. Z. S. 1888, pp. 86 & 87.
915. —. New species of *Lucanida*, *Cetoniida*, and *Buprestida* in the British Museum. Ann. N. H. (6) i, pp. 260-264. [*Coleoptera*.]
916. —. Additional observations on the Tea-Bugs (*Helopeltis*) of Java. Tr. E. Soc. 1888, p. 207. [*Rhynchota*.]
917. —. Aid to the identification of Insects. Part 29, pls. 177-180. London: 1888. [*Lepidoptera*, *Coleoptera*.]
918. WEED, C. M. Descriptions of some new or little known *Microgasterina*. Tr. Am. Ent. Soc. xv, pp. 294-297. [*Hymenoptera*.]

919. [WEED, C. M.] Contribution to a knowledge of the autumn life-history of certain little known *Aphididae*. *Psyche*, v, pp. 123-134.
920. —. On the *Hymenopterous* parasites of the Strawberry Leaf-roller, *Phoxopteris complana*, Fröl. *Ent. Am.* iv, pp. 149-152.
921. WEISE, J. Ueber *Coccinellen* aus Afrika, hauptsächlich von Herrn Major v. Mechow gesammelt. *Deutsche e. Z.* xxxii, pp. 81-96. [*Coleoptera*.]
922. —. Ueber die Afrikanische *Galeruciden*-Gattung *Pachytoma*, Clk. *T. c.* pp. 111 & 112. [*Coleoptera*.]
923. —. *Timarcha strophium*. *T. c.* p. 124. [*Coleoptera*.]
924. —. *Cryptocephalus tardus*, n. sp., vom Monte Rosa. *T. c.* p. 368. [*Coleoptera*.]
925. —. Naturgeschichte der Insecten Deutschlands. *Coleoptera*. Sechster Band. Lief. 5, pp. 769-960. Berlin: 1888.
Continues the descriptions of *Halticidae*.
926. WESTWOOD, J. O. Notes on the life-history of various species of the *Neuropterous* genus *Ascalaphus*. *Tr. E. Soc.* 1888, pp. 1-12, pls. i & ii.
927. —. List of diurnal *Lepidoptera* collected in Northern Celebes, by Dr. Hickson. *T. c.* pp. 467-475, pl. xii.
WHITE, W. [See GRIFFITHS (337).]
928. WIELOWIEYSKI, H. Studyja nad komórka zwierzece. Część I. Badania nad jajkiem zwierzęcem. *Rozpraw Wydz. matem.-przyr. Akad. Umiej.* xvi, pp. 126-270, pls. i-iii.
A paper, entirely in the Polish language, on oogenesis in Insects.
929. WILL, L. Entwicklungsgeschichte der viviparen Aphiden. *Biol. Centralbl.* viii, pp. 145-154.
Observations on a variety of embryological points.
930. —. Entwicklungsgeschichte der viviparen Aphiden. *Zool. Jahrb.* iii, *Abth. Anat.* pp. 201-286, pls. vi-x.
Includes: —i. Kurze Uebersicht über die Entstehung des Blastoderms. ii. Die Entstehung der Keimblätter und der Embryonalhüllen. iii. Vergleichende Betrachtungen: (1) Ueber die Gastrula der Insecten; (2) Ueber den Ursprung der Embryonalhüllen bei den Insecten. iv. Die Entstehung der Organe. v. Die Bedeutung des präoralen Abschnitts. There is also a bibliographical list. *Summary, J. R. Micr. Soc.* 1888, p. 573.
931. WILLISTON, S. W. Table of the families of *Diptera*. *Tr. Kansas Ac.* x, pp. 122-128.
932. —. *Diptera brasiliana*, ab. H. H. Smith collecta. Part I. *Stratiomyidae, Syrphidae*. *Tr. Am. Ent. Soc.* xv, pp. 243-291.
933. —. A new South American genus of *Conopinae*. *Canad. Ent.* xx, pp. 10-12. [*Diptera*.]

934. [WILLISTON, S. W.] Notes and descriptions of North American *Tabanide*. Tr. Kansas Ac. x, pp. 129-142. [*Diptera*.]
935. —. *Hilarimorpha* and *Apiocera*. Psyche, v, pp. 99-102.
936. —. An Australian parasite of *Icerya purchasi*. Ins. Life, i, p. 21. [*Diptera*.]
937. WOOD-MASON, J. Report on some Insects destructive to the Castor-oil plant in the Bellary district. J. Ag. Soc. Ind. (n.s.) viii, pp. 83-87.
938. WOODWARD, H. On the discovery of the larval stage of a Cockroach, *Ectoblattina peachii*, from the coal-measures of Kilmaurs, Ayrshire. Rep. Brit. Ass. 1887, p. 696.
939. WOODWORTH, C. W. Synopsis of North American *Cicadide*. Psyche, v, pp. 66 & 67. [*Rhynchota*.]
940. WRIGHT, W. G. Description of a new *Hemileuca*. Canad. Ent. xx, pp. 31-34. [*Lepidoptera*.]
941. WULP, F. M. VAN DER. Nieuwe Argentijnsche *Diptera*. Tijdschr. Ent. xxxi, pp. 359-376, pls. ix & x.
- [See also GODMAN & SALVIN (319).]

II.—ANATOMY, PHYSIOLOGY, BIOLOGY.

1. GENERAL, COMPARATIVE, AND EXTERNAL.

Value of homologies of external skeleton in *Arthropods*, POUCHET (679).

Anatomy, general and external, of *Thysanura*, GRASSI (329); of *Thysanoptera*, JORDAN (423); of *Phylloxera*, LEMOINE (495).—External anatomy of *Muscides*, PANDELLÉ (655).—Integument of *Thysanura*, Oudemans (648, pp. 164-173).

Sternum, wings, secondary sexual characters of *Aceridiide*, HALI (357).—External and internal structure of larvæ of *Trichoptera*, KLAPÁLEK (441).—Organs of aquatic locomotion, AMANS (4).

Structure and development of wing-veins, REDTENBACHER (715).

Labrum of *Coleoptera*, LABONNE (488).—Duality of labrum, CHATIN (141).

Nature of the odorous glands of *Lepidoptera*, HAASE (354).—Poison-glands of mosquito, MACLOSKIE (548).—Stink-gland of *Periplaneta orientalis*, MINCHIN (607).

Mechanism of sting and nature of poison of *Hymenoptera*, CARLET (133).—Supplementary organ of sting of *Hymenoptera*, *id.* (134).

Structure of the hypodermis in *Periplaneta orientalis*, MINCHIN (607).—Structure of Lepidopterous scales, SMITH (847), ROYSEY-PIGGOFF (779).

Jointed dorsal appendages, FIELDE (272).

2. NERVOUS SYSTEM, ORGANS OF SENSE, AND PSYCHOLOGY.

Nervous system and organs of sense of *Thysanura*, GRASSI (329), OUDEMANS (648, pp. 174-179).

Antennal structures and their functions, RULAND (786).—Sense-organs of antennæ and trophi, RATH (712).—Structure and function of palpi of *Lepidoptera*, REUTER (735).

Eyes, CIACCIO (153); of *Thysanura*, OUDEMANS (648, pp. 180-183).—Ocelli of *Machilis*, GRASSI (329, p. 603).—Development of eyes in larva of *Acilius*, PATTEN (662).—Sight, PLATEAU (674, 675, 676), TIEBE (885).

External parts of organ of hearing of *Acridiidae*, HALL (357)

Brain of *Somomya erythrocephala*, CUCCATI (172); of *Phylloxera*, LEMOINE (494, 495).

Senses and instinct, LUBBOCK (527, 528), FOREL (280), PECKHAM (663), SHARP, P. E. Soc. 1888, pp. 1-lxix. — Psychological observations on *Formica rufa*, REUTER (737).—Colour-sense, sense of direction, sense of smell, recognition of friends, amongst ants, LUBBOCK (527).—Means of guidance, PUTNAM, P. Bost. Soc. xxiii, p. 465.—Harvesting ants, TRYON (888).—Ants covering their mounds with bright objects, HAY, Tr. Kansas Ac. x, p. 27.—Insects distinguishing colour, COCKERELL (157).—Faulty instinct, LUGGER, P. E. Soc. Wash. i, p. 50.—Relations of position of insects to light and gravity, LOEB (520, 521).

3. MUSCULAR SYSTEM.

Of *Thysanura*, GRASSI (329).—Histology of muscles of wings, CIACCIO (152); of muscles of legs and wings, RAMÓN (709).—Notes on the head-muscles of *Harpalus*, GROVE (347).

4. ORGANS AND FUNCTION OF NUTRITION.

Trophi, digestive system, salivary glands, Malpighian vessels of *Thysanura*, OUDEMANS (648, pp. 184-199). — Malpighian tubules, GRIFFITHS (335).—Salivary glands, renal organs, and liver, *id.* (336).—Intestine and fat-body in *Thysanura*, GRASSI (329).—Trituratory-crop of ants, EMERY (230).—Alimentary canal of *Ephemeridae*, FRITZE (289).—Acidity of fluids in digestive tube of *Cuntharis*, BEAUREGARD (48).—Liquid secreted by *Timarcha pimelioides*, BONO (87).

5. CIRCULATION AND RESPIRATION.

Circulatory system of *Thysanura*, GRASSI (329), OUDEMANS (648, pp. 199-201).—Heart beat of *Corydalis cornutus*, HOWARD, P. E. Soc. Wash. i, p. 34.

Respiratory system of *Thysanura*, GRASSI (329), OUDEMANS (648, pp. 202-206). — Respiratory apparatus of larvæ of *Trichoptera*, &c., MÜLLER (621).—Mode of respiration of larva of *Donacia*, DEWITZ (183).—Respiration of eggs of *Bombyx mori*, LUCIANI & PIUTTI (531, 532).—

Air in cocoon of silkworms, REGNARD (721).—Structure of terminal stigma in *Hymenoptera*, CARLET, C.R. (135).

Influence of light on oxygenation, LOEB (519).

6. SEXUAL ORGANS AND EMBRYOLOGY.

Sexual organs of *Thysanura*, GRASSI (329), OUDEMANS (648, pp. 207-215.)

Embryology, BRUCE (111), GRABER (324, 325); of *Meloe*, NUSBAUM (628); of viviparous *Aphididae*, WILL (929, 930); of *Musca*, BÜTSCHLI (120); of *Musca vomitoria*, VOELTZKOW (899).—First stages of development in egg of fly, HENKING (370).—Embryology of parthenogenetic eggs of *Liparis*, PLATNER (677).—Development of entoderm in *Blatta*, CHOLODKOVSKY (145).

Oogenesis, WIELOWIEYSKI (928).—The structure and growth of the unfertilised egg, LEYDIG (512).

Spermatogenesis, GILSON (313).

Parthenogenesis, MASSA (560); in *Ocnieria dispar*, BOCK (85).—Note on parthenogenesis in *Bombyx mori*, VERNON, Zool. Anz. xi, p. 263, and TICHOMIROFF, pp. 342-344.

Hermaphrodites, BECKER (50), MIK (598), DITTRICH (192), HONRATH (387).—Statistics as to hermaphroditism in *Lepidoptera*, SPEYER, S. E. Z. xlix, pp. 201 & 202; of *Lepidoptera*, HONRATH (387); of *Gastropacha quercus*, BERTKAU, Verh. Ver. Rheinl. xlv, S. B. p. 67; of *Apis mellifica*, LUCAS, p. lxxxiv, Bull. Soc. Ent. Fr. (6) viii.

7. GENERAL BIOLOGY AND STRAY NOTES.

Parasitism, MICHAEL (596).

Histology of *Musca vomitoria* during metamorphosis, REES (717).—Changes during pupation, EMERTON (229).—Loss of weight in winter pupa of *Pontia brassicae*, URECH (895).—Prolongation of pupation of *Bombyx*, SPEYER (859).

Formic acid in *Lepidoptera*, POULTON (682).

Composition of nutritive paste of the bee, PLANTA (673).

Sexual forms in *Termitidae*, GRASSI (330, 331, 332).

Influence of heat in producing varieties, VENUS (898).

Causation of seasonal dimorphism, COCKERELL (156).—Dimorphism in larvæ, POULTON (683).

Ants and *Aphididae*, BOS (91).

Ants and ants' nest beetles, WASMANN (912).

Plants and ants, LUDWIG (533, 534), SCHIMPER (801).

Insects feigning death, GROTE, Canad. Ent. xx, p. 120, HAMILTON, t. c. p. 179, WEBSTER, t. c. p. 199.

Luminosity, DITTRICH (193), HAASE (352), RILEY (758).

Melanism, WEHR, P. S. Lond. E. Soc. 1887, p. 40, also t. c. p. 73, JORDAN (424); in *Lepidoptera*, CHAPMAN, Ent. M. M. xxv, p. 40; in London *Lepidoptera*, TUTT (891).

Coloration of pupa and surroundings, WHITE & GRIFFITHS, P. E. Soc.



1888, pp. vi-x, and (337).—Colour in Lepidopterous larvæ and in eggs of *Paniscus*; POULTON (683).—Colour and environment, *id.* P. E. Soc. 1888, p. xxviii.—Origin of ornamentation in *Lepidoptera*, GROTE (339).—Colouring-matter in *Huechys sanguinea*, FUMOUEZ (291).

Mimicry, TOSQUINET, address to Soc. Ent. Belg., C.R. ent. Belg. xxxii, pp. ciii-cx.—Resemblance between pupa of *Adolias coresia*, Hb., and *Hemipteron*, WEYERS, *t. c.* p. xxvi.—Mimicry between *Hymenoptera* of different families, HANDLIERSCH, SB. z.-b. Wien, xxxviii, pp. 67-69.—Accidental resemblance, SCHWARZ, P. E. Soc. Wash. i, p. 112.—Note on mimicry among ants, LUBBOCK (527, p. 121); ants and seeds, *id. t. c.* p. 133.—Mimetic modifications of legs, &c., of *Eremobites*, SAUSSURE (792, pp. 108-114).

Protection, GROTE (340); in Lepidopterous larvæ, POULTON (683); by colour and markings, *id.* (681).

Variation, COCKERELL, P. S. Lond. E. Soc. 1887, pp. 95-107; in colour, OLLIFF (636).

Phylogeny, BRAUER (100), GRASSI (329), ASHMEAD (19).—Polypody in Insect-embryo, GRABER (325).

Origin of species, EIMER (228).

Scent-organs of *Lepidoptera*, HAASE (354, 355); of *Herminia tarsipennalis*, MELDOLA, Ess. Nat. ii. p. 113.

Music of the *Eremobites*, SAUSSURE (792, pp. 114-119).

Galls, TRAIL (886), KIEFFER (437).—Galls of *Oecidomyiidae*, MIK (599), LÖW (523); of *Chilaspis nitida*, SCHLECHTENDAL, Wien. ent. Z. vii, p. 245; of Norway, LÖW (524).

Insects and flowers: Insects attacking man; Insects as food; as intermediate hosts of parasites. [See Economic.]

Hybridism, SUCHETET (877).—Hybridization in *Lepidoptera*, FALLOU (254).

Monstrosities: CHRÉTIEN (149); of *Coleoptera* and *Hemiptera*, GADEAU DE KERVILLE, Bull. Soc. Ent. Fr. (6) viii, pp. lxxxii-lxxxiv; in *Melitea minuta*, COCKERELL, Ent. M. M. xxv, p. 93.—Deformities of wings in *Lepidoptera*, FROMHOLZ (290).

Diseases of Insects: BROGNIART (109), FORBES (278), GIARD (311, 312), THAXTER (882); of larva of *Antheraea mylitta*, DUMAINE (213); of bees, McLAIN, in Riley Rep. 1887, pp. 171-175; of *Blissus leucopterus*, HOWARD, in RILEY (754).—Note on Chinch-bug diseases, FORBES, Psyche, v, p. 110.—Parasitic fungi of Insects, GRILL (388).—*Cordyceps*, fungus attacking Insects, PATOUILLARD (661).—*Bacteria*-like bodies in eggs, BLOCHMANN (84).

Migration, FOWLER (284).

Longevity of ants, LUBBOCK, J. L. S. xx, p. 133.

Pimelia sp. living without food for 9 or 10 months, ROBBE, C.R. ent. Belg. xxxii, p. lv.

Insects attracted by electric light, Bull. Soc. Ent. Fr. (6) viii, p. xxxvii.

Stray notes: Carrion-beetles attracted by *Arum dracunculius*, WALKER (904).—*Diptera* in mines, AURIVILLIUS (31).—Insects in coffins, MÉGNIN (571).—Insect habitation, FIELDE (273).—Water-beetles as distributors of *Algae*, MIGULA (597).

III.—FAUNISTIC AND PALÆONTOLOGY.

The reference-numbers under each of the twelve regions are believed to give a reference to every memoir containing a notice affecting the entomological Fauna of that region. But synonymical notes and changes of systematic position are only incompletely referred to.

Insects at sea : CORDEAUX, *Ent. M. M.* xxv, p. 111 ; GRAPES, *Ent.* xxi, pp. 161 & 162.

Miscellaneous remarks on the distribution of *Coleoptera* and *Lepidoptera*, KOLBE (446).

New species of which the country is unknown : *Myelois grossipunctella*, Rag., *Salebria turpidella*, Rag.

1. ARCTIC AND ANTARCTIC.

Lepidoptera. PETERSEN (669).—SCHØYEN, "*Bombyx populi*, L., fra den arktiske region"; *Ent. Tidskr.* ix, p. 142.

2. INSULAR (INCLUDING NEW ZEALAND).

Loo Choo Is., see East Asia.

Hawaiian Is. (*Lepidoptera*), MEYRICK (580) ; (*Rhynchota*) BLACKBURN (79).

Tonga-Tabou (*Coleoptera*), LÉVEILLÉ (503).

New Ireland, New Britain, Duke of York I. (*Coleoptera*), MASTERS (561).

Fiji Is. (*Coleoptera*), OLIVIER (641).

New Hebrides (*Lepidoptera*), SNELLEN (855).

Marquesas and Fiji (*Lepidoptera*), RAGONOT (702).

New Pomerania (*Lepidoptera*), HONRATH (385).

Solomon Is. : (*Coleoptera*), GAHAN (293) ; (*Lepidoptera*), DRUCE (206, 207), GODMAN & SALVIN (320, 321), SALVIN (787).

Thursday I., Solomon Is. (*Lepidoptera*), BUTLER (113).

Fiji Is. (*Lepidoptera*), DRUCE (205).

New Caledonia, New Zealand, New Britain, Duke of York I., New Hanover, Fiji (*Orthoptera*), BRUNNER (112).

Norfolk I. (*Insecta*), OLLIFF (634).

New Calodonia (*Coleoptera*), BALY (39), GAHAN (294) LÉVEILLÉ (503), PASCOE (659).

New Zealand : (*Insecta*), HUDSON, *Ent.* xxi, pp. 267-269.—(*Coleoptera*) COLENSO (158), LEWIS (505).—(*Hymenoptera*) CAMERON (128).—(*Lepidoptera*) MEYRICK (581, 582, 583, 584, 585).—(*Diptera*) *Ins. Life*, i, p. 32.—(*Coccida*) MASKELL (559).

Auckland Is. (*Anoplura*), TROUSSERT & NEUMANN (887).

3. PALÆARCTIC REGION.

(a.) *The Region.*

Some Insects common to Europe and Colorado ; COCKERELL, *Ent. M. M.* xxv, p. 67.

Coleoptera. FAUVEL (261), FAUST (259), KUWERT (483, 485), REITTER (724, 732); SCHMIDT, *Histeridae* (804).

Hymenoptera. HANDLIRSCH (366, 367), JAKOWLEW (416), KOHL (442, 444), KONOW (454); KRIECHBAUMER, *Ichneumonidae* (472); MORAWITZ (613), RADOSZKOWSKI (699, 701).

Lepidoptera. CHRISTOPH (151), GUMPPENBERG (350), PETERSEN (669), RAGONOT (702).

Rhynchota. HORVATH (396), PUTON (689, 691).

Orthoptera. BRUNNER (112), SAUSSURE (792).

(b.) *Collective Europe.*

Coleoptera. FAUVEL, *Rectifications au Catalogus Coleopterorum Europæ et Caucasi* (suite); *Rev. d'Ent.* vii, pp. 229-251.—FLACH (277), GUILLEBEAU (349), HEYDEN (376), KUWERT (484), LEWIS (507), MATTHEWS (319, p. 118), PUTON (693), REITTER (729, 730), and *Deutsche e. Z.* xxxii, p. 331, SEIDLITZ (826, 827), STIERLIN (871, 872, 873), WASMANN (912), WEISE (925).

Hymenoptera. ANDRÉ (5), HANDLIRSCH (368), KRIECHBAUMER (474), MARSHALL (555), RUDOW (780), SCHMIEDEKNECKT (807, 808), THOMSON (884).

Lepidoptera. OLLIFF (636), PÜNGELER (688), RÜHL (783), STANDFUS (863).

Diptera. KIEFFER (437), RÖDER, *Ent. Nachr.* xiv, p. 21, SCHNABL (809), WACHTL (900), WULP, *Tijdschr. Ent.* xxxi, pp. xxii, xxiii, & xevi.

Rhynchota. HORVATH (397), LÖW (525), PUTON, *Rev. d'Ent.* vii, p. 257, REUTER (744), REY (748, 749).

Orthoptera. KRAUSS (471).

(c.) *British Islands.*

Insecta. Additions to British Insect fauna in 1887; ADKIN, P. S. *Lond. E. Soc.* 1887, pp. 18, &c.—Many localities of capture of British Insects reported in P. S. *Lond. E. Soc.* 1887, *passim*.—Source of the Hessian-fly and its parasites; ORMEROD (645).—Hastings; BENNETT, *Ent. M. M.* xxv, p. 164.—Woking; SAUNDERS, *Ent. M. M.* xxv, p. 131.—Wellington; *Rep. Wellington Coll. Soc.* xix, p. 37.—PORRITT, an entomological expedition to North Wales and the Isle of Man; *Naturalist*, 1888, pp. 103-107.—List of notices on the *Lepidoptera* of the north of England, 1885-1887; *Naturalist*, 1888, pp. 58-78, and *cf.* also p. 110, *t. c.*; *id.* *Hymenoptera*, 1884-1887, *t. c.* pp. 153-155; *Coleoptera*, 1884-1887, *t. c.* pp. 203-210; *Neuroptera*, 1884-1887, *t. c.* pp. 285 & 286.

Coleoptera. E. A. WATERHOUSE, *novelty*, *Ent. M. M.* xxv, p. 133.—FOWLER (282).—*Apholius melanostictus* withdrawn; ELLIS, P. E. *Soc.* 1888, pp. xv-xviii.—Isle of Wight; CHAMPION, *Ent. M. M.* xxv, p. 133; FOWLER, *Ent. M. M.* xxv, p. 17; GRANT, *Ent.* xxi, p. 92.—Hastings; BENNETT, *Ent. M. M.* xxiv, p. 233.—Kent; MALINGS, *Ent. M. M.* xxv, p. 133.—Mickleham; CHAMPION, *Ent. M. M.* xxv, p. 134.—Berkhamstead; CARRINGTON, *Ent.* xxi, p. 213.—Oxford; FOWLER, P. E. *Soc.* 1888, p. xxxvii.—Burton-on-Trent; FOWLER, *Ent. M. M.* xxiv, p. 232.—Market

Weighton; BAYFORD, *Naturalist*, 1888, p. 329.—Newnham-on-Severn; FOWLER, *Ent. M. M.* xxiv, p. 214.—Hartlepool; GARDNER, *Naturalist*, 1888, p. 119, and *Ent. M. M.* xxiv, p. 275.—Lincolnshire; TERO, *Ent.* xxi, p. 213.—Liverpool; ELLIS (226).—Ingleborough; CARTER, *Naturalist*, 1888, p. 245.—Lake District; CARTER, *Naturalist*, 1888, p. 246.—Northumberland; BOLAM, *P. Berw. Club*, xi, p. 558.—Wales: Llangollen; WILDING, *Ent. M. M.* xxv, p. 37.—Scotland: Castle Douglas; DOUGLAS, *Ent. M. M.* xxv, p. 37.—St. Kilda; SHARP, *P. E. Soc.* 1888, p. xxvi.—Ireland: *Coleoptera* at Armagh in 1887; JOHNSON, *Ent. M. M.* xxiv, pp. 193-196, and xxv, p. 18.—Carlingford; JOHNSON, *Ent. M. M.* xxv, pp. 139 & 140.

Hymenoptera. MARSHALL, n. g. & spp. (555).—CAMERON, novelty, *P. Manch. Soc.* xxvi, p. 52.—CAMERON, novelty, *Mem. Soc. Manch.* (4) i, p. 142.—CAMERON, n. spp. (128).—CAMERON, n. sp. (129).—CAMERON, n. sp. (130).—CAPRON, novelties, n. spp. (132).—ENOCK, parasites of Hessian Fly, novelty, *Ent.* xxi, p. 202.—PERKINS, *Ent. M. M.* xxv, pp. 128-130.—Worthing; STEWART, *Ent.* xxi, p. 321.—Lewis; JENNER, *Ent.* xxi, p. 322.—Petersfield; BULL, *Ent.* xxi, p. 235.—Chobham; CAMERON, *P. Manch. Soc.* xxvi, p. 54.—London; ROBINSON, *Ent.* xxi, p. 283.—Berkhamstead; CARRINGTON, *Ent.* xxi, p. 214.—North Lincolnshire; GEORGE, *Naturalist*, 1888, p. 107.—Hartlepool; GARDNER, *Ent. M. M.* xxv, p. 131.—Yorkshire; DOBRÉE, *Naturalist*, 1888, p. 51.—Scotland; CAMERON, *P. N. H. Soc. Glasg. (n.s.)* ii, pp. xii & xvi.—Ireland: Armagh; JOHNSON, *Ent. M. M.* xxv, p. 132.

Lepidoptera. FLETCHER, *Butalis laminella*, novelty, *Ent. M. M.* xxv, p. 15.—RICHARDSON, n. sp. (750).—STANTON, n. sp. (860); *id.*, n. sp. (861); *id.*, n. sp. (862).—WARREN, novelty, *Ent. M. M.* xxv, p. 146.—BARRETT, variation (42).—TUTT, varieties of *Noctua* (893).—HODGKINSON, captures of *Notodonta bicolor*, *Ent.* xxi, p. 275.—GREENE, claims of *Clostera anachoreta*, *Ent.* xxi, pp. 31-33.—Channel Is.; HAWES, *Ent.* xxi, pp. 63 & 64, WALKER, *t. c.* pp. 150 & 151.—JORDAN, a week in Jersey, *Ent. M. M.* xxv, pp. 49-52.—Penryn; MAYNE, *Ent.* xxi, p. 210.—Cornwall; VIVIAN, *Ent.* xxi, pp. 56 & 59.—South Devon, notes on the *Macro-Lepidoptera* of; KANE, *Ent.* xxi, pp. 34-36.—Avonwick; RAYNOR, *Ent.* xxi, p. 92.—Bideford; BRAY, *Ent.* xxi, p. 276.—Dawlish; AULD, *Ent.* xxi, p. 258, COOK, *t. c.* p. 274.—Teignmouth; JORDAN, *Ent. M. M.* xxiv, p. 274.—JORDAN, melanism in Birmingham and South Devon (424).—Dorsetshire: CAMBRIDGE (126); "*Butalis siccella*," BANKES, *P. Dorset Field Club*, ix, pp. 118-122.—Bloxworth: CAMBRIDGE, *Ent.* xxi, p. 276.—Isle of Wight; STEVENS, *Ent.* xxi, p. 229; GRANT, *Ent.* xxi, p. 115; STEVENS, *Ent. M. M.* xxv, p. 91; BURNEY, *t. c.*—Hampshire, the *Lepidoptera* of; HERVEY, *P. Hampsh. Club*, i, pp. 28-34, ii, pp. 19-21.—Christchurch; ADYE, *Ent.* xxi, p. 162.—Lymington; HESELTINE, *Ent.* xxi, p. 276.—Portland; BARRETT, *Ent. M. M.* xxv, p. 160.—New Forest; HODGES, *Ent.* xxi, p. 229; CAPPER, *Ent.* xxi, p. 279, and BLABER, *t. c.*; WALKER, *Ent.* xxi, p. 282; BARRETT, *Ent. M. M.* xxv, p. 139.—Winchester; WARNER, *Ent.* xxi, p. 233.—Chichester; ANDERSON, *Ent.* xxi, p. 276.—Eastbourne; ADKIN, *P. S. Lond. E. Soc.* 1887, pp. 82-86.—Deal: TUTT, *Ent.* xxi, p. 259; MEEK, *Ent. M. M.* xxv, p. 111;

PORRITT & TUGWELL, *t. c.* p. 112.—Ramsgate: BRIGGS, Ent. xxi, p. 184; BUCKMASTER, Ent. xxi, p. 257.—Margate; STANLEY, Ent. xxi, p. 255.—Dover; WEBB, Ent. xxi, pp. 132–135.—Folkestone; BARKER, Ent. xxi, p. 255; AUSTEN, Ent. xxi, p. 231.—Lewes, notes on the comparative rarity of *Lepidoptera-Rhopalocera*, once common in the neighbourhood of, WEIR, P. S. Lond. E. Soc. 1887, pp. 31–34; WARD, NICHOLSON, Ent. xxi, p. 186. Hastings; SAUNDERS, Ent. M. M. p. 65.—Battle; MILLENS, Ent. xxi, p. 229.—Chatham; FROHAWK, Ent. xxi, p. 254, and Ent. M. M. xxv, p. 113.—Rochester; CHANEY, Rochester Nat. pp. 321–323.—Shoeburyness; COOPER, Ent. xxi, p. 258.—Dartford; YOUENS, Ent. xxi, p. 231.—Sevenoaks; ROGERS, Ent. xxi, p. 273.—Surrey: LEE, Ent. xxi, p. 89; WHITTLE, Ent. xxi, p. 324.—Esher; ADKIN, Ent. M. M. xxv, p. 160.—Wimbledon, *Sphinx pinastri*; GODWIN, Ent. M. M. xxv, p. 159.—London: BRIGGS, Ent. xxi, p. 258; STONEMAN, Ent. xxi, p. 210; BOYD, P. E. Soc. 1888, p. xxxv.—Near London; BIGGS, Ent. xxi, p. 56.—Acton; PLACE, Ent. xxi, p. 276.—Croydon; SHELDON, Ent. xxi, p. 113.—Reading: BUTLER, Ent. xxi, p. 158; PHILBRICK, Ent. xxi, p. 232; BARNES, Ent. xxi, p. 321; HOLLAND, Ent. M. M. xxv, p. 107.—Somersetshire; MILTON, Ent. xxi, p. 62.—Herefordshire; LEA, Ent. xxi, p. 160.—Hertfordshire: SILVESTER, Tr. Hertf. Soc. pp. 89–92; DURRANT, contributions to the knowledge of the entomological fauna of Hertfordshire, *t. c.* pp. 63–75.—Haileybury; BOWYER, Tr. Hertf. Soc. v, pp. 30–32.—Essex; WEBB, TUDOR, Ent. xxi, p. 231.—Walthamstow; DOWNING, Ent. xxi, p. 155; COOPER, *t. c.* p. 184.—Enfield; SYKES, Ent. xxi, p. 323.—Stony Stratford; THOMPSON, Ent. xxi, p. 210.—Rugby; Rep. Rugby Soc. xxi, pp. 43–45.—Oxfordshire; NEWMAN, Ent. xxi, p. 12.—Wicken; ADYE, Ent. xxi, p. 234.—Oundle; EDWARDS, Ent. xxi, p. 258.—Burton-on-Trent; THORNEWILL, Ent. xxi, p. 184.—The *Micro-Lepidoptera* of Suffolk: *Tortrices* and *Tineæ*; BLOOMFIELD, St. Leonards-on-Sea, 1888, 7 pp.—Aldeburgh; COOPER, Ent. xxi, p. 257.—Cromer: TAWELL, Ent. xxi, p. 257.—Norfolk: BARRETT, Ent. M. M. xxiv, p. 198; BARRETT, Ent. M. M. xxv, p. 159; BARRETT, Ent. M. M. xxv, p. 111; BARRETT, Ent. M. M. xxv, p. 137, and THOULESS, *t. c.* p. 159: *Tortrices* in, BARRETT, Ent. M. M. xxiv, pp. 243–246.—King's Lynn; BARRETT, Ent. M. M. xxiv, p. 212.—Lincolnshire; GARFIT, Naturalist, 1888, p. 268.—Hartlepool; GARDNER, Naturalist, 1888, pp. 268 & 286.—Brigg; CROSS, Ent. xxi, p. 258.—Yorkshire; PORRITT, Naturalist, 1888, pp. 12, 82, 151, & 331.—CARTER, BLADES, Naturalist, 1888, p. 268; TUTT, Ent. xxi, p. 278.—Scarborough, Harrogate; HEAD & THOMPSON, Ent. xxi, p. 231.—Harrogate; THOMPSON, Ent. M. M. xxv, p. 91.—Cheshire; ARKLE, Ent. xxi, p. 161 & 313–319.—Wallasey; ARKLE, Ent. xxi, p. 257.—Delamere Forest; ARKLE, Ent. xxi, pp. 2–5.—Malpas; DOD, Ent. xxi, p. 256.—Lancashire, Cumberland; HODGKINSON, Ent. xxi, pp. 104–108.—Eccles; STEWARD, Ent. xxi, p. 259.—Fleetwood; CLARKE, Ent. xxi, p. 321.—Berwickshire; BOLAM, P. Berw. Club, xi, pp. 559–561.—Wales: GOWER; CHAMBERLAIN, Ent. xxi, p. 259.—Carmarthenshire; GRASKE, Ent. xxi, p. 281.—Glamorgan; ALLEN, Ent. xxi, pp. 115 & 116.—Tenby; JAGER, Ent. xxi, p. 280.—Ramsey I.; WILKINSON, Ent. M. M. xxiv, p. 185.—Scotland, Argyllshire; CLARKE, Ent. M. M. xxv, p. 162.—Aberdeen; HORNE, Ent. xxi,

p. 210.—Dundee; KIRK, Ent. xxi, p. 231.—Hebrides, Orkney and Shetland; SOUTH (856).—The *Lepidoptera* of the Outer Hebrides, Orkney, and Shetland; TRAIL, Scot. Nat. 1888, pp. 298-304.—Outer Hebrides; SOUTH (857).—Ireland: Belfast; WATTS, Ent. xxi, p. 186.—Armagh; JOHNSON, Ent. M. M. xxiv, pp. 211 & 212.—Howth; HART, Ent. xxi, p. 232.

Diptera. VERRALL (896).—VERRALL, novelties, n. spp. (897).—MEADE, novelty, n. sp. (567).—MEADE, n. sp. (566).—Lincolnshire; KEW, Naturalist, 1888, pp. 217 & 218.—TRAIL (886).

Rhynchota. DOUGLAS, n. sp. (203).—DOUGLAS, novelties, n. spp. (202). EDWARDS, novelties, n. spp. (218).—EDWARDS, n. spp. (217).—EDWARDS, novelty (215).—EDWARDS, novelty (216).—SAUNDERS, novelty, Ent. M. M. p. 78.—SAUNDERS, novelty, Ent. M. M. xxv, p. 34.—SAUNDERS, novelty, P. E. Soc. 1888, p. xviii.—REUTER (744).—SAUNDERS, Ent. M. M. xxv, p. 148.—Lincoln; MASON, Ent. M. M. xxv, p. 36.—A list of some *Hemiptera-Heteroptera* of Lincolnshire, with notes on collecting; MASON, Naturalist, 1888, pp. 287-297.—Isle of Man; MASON, Naturalist, 1888, p. 244.

Neuroptera. Ephemerida, synopsis of; EATON (214).—Deal and Dover; HALL, Ent. M. M. xxv, p. 163.—Arundel; KING, Ent. M. M. xxiv, p. 232.—London; MACLACHLAN, Ent. M. M. xxiv, p. 173, and xxv, p. 67.—Norfolk; MACLACHLAN, Ent. M. M. xxiv, p. 214.—Yorkshire; PORRITT, Ent. M. M. xxv, p. 132.—Scotland: Island of Coll; KING, P. N. H. Soc. Glasg. (n.s.) ii, pp. 133 & 134.—Ireland; KING, P. N. H. Soc. Glasg. (n.s.) ii, pp. xix & xx.—Athlone; KING, Ent. M. M. xxv, p. 93.

Orthoptera. Dorsetshire; KEMP-WELCH, P. Dorset N. H. Club, viii, p. 61.

(d.) *North Europe and Siberia* [see also (a.) and (b.).]

Insecta. Norway; LÖW (524).—SCHÖYEN, Ströbemarkninger om entomologiske foreteelser i Norge 1887; Ent. Tidskr. ix, pp. 41-46.—Sweden; THOMSON (883).—LAMPÅ, Redogörelse angående ent. föreningens insektsamling för år 1887; Ent. Tidskr. ix, pp. 47-49.

Coleoptera. Sweden; SCHÖYEN, Ent. Tidskr. ix, p. 15.—Siberia; LEFÈVRE (493).—Norway; SCHÖYEN (816).—Sweden; AURIVILLIUS (30, 32).

Lepidoptera. Scandinavian *Tortricida*; WALLENGREN (906).—Statistics of the Norwegian Lepidopterous fauna, and additions to it; SCHÖYEN (817).—BAKER, Notes on Norwegian *Crambi*; Ent. M. M. xxiv, pp. 267 & 268.—Sweden; WERMELIN, Ent. Tidskr. ix, p. 96.—MEVES, Bidrag till Kännedomen om Svenska fjärlars geografiska utbredning; Ent. Tidskr. ix, pp. 17 & 18.—Amurland; GRAESER (327); STAUDINGER (866).

Rhynchota. AUTRAN & REUTER (34).—Irkutsk; LETHERRY (498).

Neuroptera. Norway; SCHÖYEN (818).

Orthoptera. Sweden; HALL (358).

(e.) *Central and Eastern Europe* [see also (a.) and (b.).]

Insecta. RUDOW, Ent. Nachr. xiv, p. 148.—Denmark; MEINERT (574).—Danzig; BRISCHKE (108).—Hela; BRISCHKE (107).—Seeresen;

BRISCHKE (105).—Netherlands; Tijdschr. Ent. xxxi, p. xxvii.—Migration in the Alps; FICKE (271), OTTO (647).—Sarepta; BECKER (49).

Coleoptera. FAUVEL (263), STIERLIN (876).—Denmark; MEINERT (573).—Stettin; VARENDORFF, Soc. Ent. iii, p. 20.—Netherlands; EVERTS, (236) and Tijdschr. Ent. xxxi, pp. xvii-xix & xxxvi.—Belgium: BORRE (89); MEUNIER, Nat. Sicil. vii, p. 298.—BORRE, Matériaux pour la faune entomologique de la province du Luxembourg Belge; *Coléoptères*, troisième centurie (Ex Pub. Inst. Luxemb.).—BORRE, Matériaux pour la faune entomologique de la province de Namur; *Coléoptères*, troisième centurie: Brussels, 1888.—BORRE, *Coléoptères* de la province de Liège: Centurie iv; Mém. Liège, xv, No. 2, pp. 1-51.—BORRE, C.R. ent. Belg. xxxii, p. xii; BORRE, C.R. ent. Belg. xxxii, pp. xxii, xxvii, xxxvi, lxi, lxxxviii, lxxxix, xcix, & c.—Essai de catalogue des *Staphylinini* de la province d'Anvers; ROELOFS, C.R. ent. Belg. xxxii, pp. xxxi-xxxiii.—ROELOFS, Essai de catalogue des *Lathridiidae*, *Histeridae*, *Galerucini*, et *Halticini* de la province d'Anvers; C.R. ent. Belg. xxxii, pp. xcii-xcvi.—Germany; EPPELSHEIM (232), KRAATZ (456), GERHARDT, Deutsche e. Z. xxxii, pp. 356-360, SCHILSKY, (797, 799, 800) and Deutsche e. Z. xxxii, p. 366.—Berichtigungen und Ergänzungen zu Schilsky's Verzeichniss der deutschen Käfer; SCHILSKY, pp. 321-323, FRICKEN, pp. 323-325, LUDY, p. 325, LETZNER, p. 325, DOESBURGH, p. 326, CZWALINA, pp. 326-328, Deutsche e. Z. xxxii.—Bitterfeld; RÖDER, Ent. Nachr. xiv, p. 362.—Liegnitz; GERHARDT, Z. ent. Bresl. (2) xiii, pp. 10-14.—Hildesheim; JORDAN, Soc. Ent. ii, pp. 178 & 185, iii, pp. 1, & c.—LETZNER, Verzeichniss der Käfer Schlesiens (contin.); Z. Ent. Bresl. (2) xiii, pp. 181-236.—Austria; HACKER, Wien. ent. Z. vii, p. 56, HABERFELNER, Soc. Ent. iii, p. 4, WACHTL (902), ORMAY (643).—ORMAY, Supplementa Faunæ Coleopterorum in Transsylvania; cf. Wien. ent. Z. vii, p. 276.—Munich; WÖLLMER, Soc. Ent. iii, p. 36.—Siebenburgen; BIELZ (65).—Switzerland; RÄTZER (713).—Monte Rosa; WEISE (924).—Trient; BERTOLINI, Contribuzione alla fauna trentina; continuazione, *Hydrophilidae*-*Staphylinidae*; Bull. Ent. Ital. xx, pp. 3-58.—Sarepta; GANGLBAUER (304).

Hymenoptera. Danzig; BRISCHKE (106).—Dorpat; MÜHLEN (620).—Netherlands: BOS, rectifications in list of *Formicidae*; Tijdschr. Ent. xxxi, pp. 242-244.—Belgium; MEUNIER, (591, 592, 593) and Nat. Sicil. viii, pp. 48-54.—Germany; FRIESE, "Ueber einige für Deutschland neue Bienen und Wespen;" Ent. Nachr. xiv, pp. 103 & 104.—Switzerland; BRAUNS (101), KRIECHBRAUER (473).—Austria; HENSCHEL, *Megachile* (371).—Munich; KRIECHBAUER (476).—Tyrol; KOHL (443).—Russia; ARNOLD (14).

Lepidoptera.—Heligoland; CORDEAUX, Naturalist, 1888, pp. 219 & 220.—Netherlands; OUDEMANS, De nederlandse *Macrolepidoptera* (648).—Belgium; HIPPERT, C.R. ent. Belg. xxxii, pp. xiii, lxix, & xcvi; VERHEGGEN, t. c. p. xxvii: la Fagne; WILLAIN, t. c. p. xiii: Neufchateau; HIPPERT, t. c. p. lv: Vierves; id. t. c. p. lvii.—Germany; HERMS, S. E. Z. xlix, p. 82; STANDFUSS (864); GLASER, Ent. Nachr. xiv, pp. 323-328.—The moors of the Upper Harz; HOFFMANN (380).—Harz; RÖDER, *Doritis*. Ent. Nachr. xiv, p. 316.—GLITZ: Vierter Nachtrag zu dem Verzeichnisse der bei Hannover und im Umkreise von

etwas einer Meile vorkommende Schmetterlinge; JB. Ges. Hannover, 1883-1887.—Schmid's "Lepidopteren-Fauna der Regensburger Umgegend" reviewed by SAALMÜLLER, S. E. Z. xlix, pp. 70-75.—Berlin; GLEISSNER (318).—East Prussia; RIESEN (751).—Switzerland; HUTCHINSON, Ent. xxi, pp. 181-184.—Die Macrolepidopterenfauna von Zürich und Umgebung; Soc. Ent. iii, pp. 98, &c.—Austria; STRECKFUSS, B. E. Z. xxxii, p. 16.—Crimea; MÖSCHLER (619).

Diptera. LÖW (523); MIK (598).—Livland; SINTENIS (845).—Bitsch; KIEFFER (438).—Saxony; STEIN (870).—Germany; RÖDER (774); STEIN, (869) and Ent. Nachr. xiv, p. 17.—Switzerland; HUGUENIN (403).—Die *Anthrax*-Arten im Albulathal: Die *Dioctria* des Längenberges im Aargau; RÜHL, MT. schw. ent. Ges. viii, pp. 61-63.—Austria: BECKER (51); BERGROTH (58); MIK (603).—SIEBECK, seltene Dipteren gefangen im Jahre 1887 am Manhartsberg in Niederösterreich; Wien. ent. Z. vii, pp. 217 & 218.—Salzburg; MIK (599).—Silesia; SCHNABL (811, 812).—Thuringia; GIESCHNER (314).—Tyrol; MIK (604).—Poltawa; LINDEMAN (514).

Rhynchota. Fürstenberg; KONOW, Soc. Ent. iii, pp. 113, &c.

Neuroptera. Germany; ROSTOCK & KOLBE (778); RÖDER, Ent. Nachr. xiv, p. 20.—Catalogue of *Neuroptera* of Belgium; SELYS (829).—Berlin; KOLBE, *Troctes* (449).—*Japyx* at Bonn; BERTKAU, Verh. Ver. Rheinl. xlv, CB. p. 92.—Tübingen; *Odonata*, KISSLING (440).

Orthoptera. Belgium; BAMPs, C.R. ent. Belg. xxxii, pp. xviii-xxii.—Catalogue of *Orthoptera* of Belgium; SELYS (829).—Germany; SAULCY (788).—Jassy; COSMOVICI (163).—Crimea; RETOWSKI (734).

(f.) *France* [see also (a.) (b.) and (g.).]

Insecta. Bordeaux; BROWN, Act. Soc. L. Bord. xli, C.R. pp. lxxviii-lxxxiv, and xlii, pp. i & ii.—Mont Dore; OLIVIER, Rev. Sci. Bourb. i, pp. 196 & 197.

Coleoptera. JACQUET (414, 415), FAUVEL (262), PERRIN, Rev. d'Ent. vii, pp. 77-90.—Dunkerque; LEPRIEUR, Bull. Soc. Ent. Fr. (6) viii, p. exxiv.—Joigny; BERTHELIN, Bull. Soc. Ent. Fr. (6) viii, p. xxviii.—L'Yonne; LORIFERNE & POULAIN (522).—Pont de Moulins; GRANDJEAN, Rev. Sci. Bourb. i, pp. 49-53.—Somme: list of local *Coleoptera*, continued by DELABY & CARPENTIER, Bull. Soc. L. Nord. Fr. vii, pp. 20, &c.; viii, pp. 133, &c.—Deuxième excursion à la baie d'Authie; CARPENTIER, Bull. Soc. L. Nord. Fr. vii, pp. 131-135.—Rollot; DELABY, Bull. Soc. L. Nord. Fr. vii, pp. 84-87.—Paris; LESNE, Bull. Soc. Ent. Fr. (6) viii, p. cl.—Seine; BONNAIRE, Bull. Soc. Ent. Fr. (6) viii, p. xcvi; CAYOT, Bull. Soc. Ent. Fr. (6) viii, p. cxxxiii; LESNE, Bull. Soc. Ent. Fr. (6) viii, p. lxxi.—Orléans; CROISSANDEAU, Bull. Soc. Ent. Fr. (6) viii, p. clv.—Maine-et-Loire; GALLOIS (301).—Lyons; REY (747).—Savoy; CROISSANDEAU, Bull. Soc. Ent. Fr. (6) viii, p. xxxvi.—Savoy; L. DE L., Bull. Soc. Sav. ii, pp. 52-61.—Alpes-Maritimes; PERAGALLO, Bull. Soc. Ent. Fr. (6) viii, p. clxviii.

Hymenoptera. LETHIERRY (500).—Senlis; GADEAU DE KERVILLE, Bull. Soc. Ent. Fr. (6) viii, p. clxxxi.—Bourbonnais; BUISSON, Rev. Sci. Bourb. i, p. 47.

Lepidoptera. JOURDHEUILLE (426).—Somme; SEARLE, Bull. Soc. L. Nord. Fr. viii, pp. 21–24.—Paris; CHRÉTIEN, Bull. Soc. Ent. Fr. (6) viii, pp. clxxxii & clxxxiii.—Essonne; POUJADE, Bull. Soc. Ent. Fr. (6) viii, pp. cxi & cxvi.—Indre; MARTIN (557).—Hérault; HEULZ, Bull. Soc. Ent. Fr. (6) viii, p. cxvii.—S. France; STANDFUSS (864).

Rhynchota. ANTESSANTY (11), LOEW (526).—*Fulgorides* de la Loire-inférieure; DOMINIQUE, Feuille. Nat. xviii, pp. 117–120.

Neuroptera. MARTIN, *Odonata*, Feuille. Nat. xviii, pp. 31, 61, 99, 148, & 156.—Brittany; MACLACHLAN, Ent. M. M. xxiv, p. 262.—Isère; MACLACHLAN, Rev. d'Ent. vii, p. 56.

Orthoptera. MAYET (564).—Senlis; MABILLE, Bull. Soc. Ent. Fr. (6) viii, p. lxxiii.—Doulevant-le-Château; PISSOT, Bull. Soc. Ent. Fr. (6) viii, p. clviii.

(g.) *Southern Europe and Mediterranean Basin* [see also
(a.) (b.) and (f.)].

Insecta. WALKER (903).—Sardinia; COSTA (164, 165).—Spain; MEDINA, Act. Soc. Esp. xvii, pp. 24–29.—Barcelona; CUNI (173).—Guadarrama; CARRASCO, Act. Soc. Esp. xvii, pp. 63–66.—Gibraltar; WALKER (905).

Coleoptera. BOURGEOIS (92), BUYSSON (122), DESBROCHERS (181), EPPELSHEIM (233), OERTZEN (631), REITTER (728); SCHAUFUSS, *Edichirus* (796); SCHMIDT, *Heterius* (805).—Hyères; REY (746).—Spain: MARTINEZ, Act. Soc. Esp. xvii, p. 21; WEISE (923).—New Castille; PANTEL (656).—Spain & N. Africa (translation of Dieck's paper); Ent. xxi, pp. 38–43 & 75–81.—N. Africa; BEDEL (52).—Algeria; BEDEL (53).—Rome; MINGAZZINI (608).—Sicily; KUWERT (486, 487); RAGUSA, Nat. Sicil. vii, p. 272, and viii, p. 11.—Catalogue of *Coleoptera* of Sicily, cont.; RAGUSA, Nat. Sicil. p. 256.—Island of Ustica; RIGGIO, Nat. Sicil. vii, pp. 292–298.—^oHALBHERR, *Elenco sistematico dei Coleotteri finora raccolti nella Valle-Lagarino*. Fascicola iii, *Staphylinidae*. xiiii. Pubblicazione fatta per cura del Civico Museo di Rovereto.—North Roumania; HORMUZAKI (390).—Greece; STIERLIN (875).

Hymenoptera. BUYSSON (123), CAMERON (128), COSTA (166), FOREL (281).—Spain; MEDINA, (568, 569) and Act. Soc. Esp. xvii, p. 51.—Gibraltar; SAUNDERS, Ent. M. M. xxv, p. 17.—Sicily; DESTEFANI, (182) and Nat. Sicil. viii, pp. 12, &c.—Island of Ustica; RIGGIO & DE STEFANI-PEREZ (753); RIGGIO, Nat. Sicil. viii, pp. 20–22.—Corfu; KRIECHBAUMER, *Pimpla* (475).—Greece; KONOW (453).

Lepidoptera. CHRÉTIEN (150), CONSTANT (161), OBERTHUR (629), RAGONOT (704); MINA, Nat. Sicil. vii, pp. 81, &c., and viii, pp. 1, &c.—Andalusia; HÜRLIMANN, Soc. Ent. ii, p. 186.—Italy; CALBERLA (124).—Sicily: STRUVE, Nat. Sicil. vii, p. 183; FAILLA-TEDALDI, t. c. p. 206; KALCHBERG, t. c. p. 268.—Algeria: BAKER (35, 36); POUJADE, p. xl, Bull. Soc. Ent. Fr. (6) viii.—N. Africa: MABILLE (539); RAGONOT (705).—Egypt; DEMAISON (180).

Diptera. BIGOT (68), RÖDER (772).—Pyrenees; VERRALL (897).—Spain; CAZURRO, Act. Soc. Esp. xvii, p. 102.

Rhynchota. PUTON (690).—Liguria, *Psyllide*, raccolte in ; FERRARI, Ann. Mus. Genov. (2) vi, pp. 74-77.—Sicily ; REUTER (743).—Sardinia ; FERRARI (270).—Illyria ; REUTER (742).—Roumania ; REUTER (741).—Greece ; REUTER (739).

Neuroptera. Sardinia ; PARONA (657).—Liguria ; PARONA (658).

Orthoptera. KRAUSS (470), SAUSSURE (791).—Spain and Portugal ; CAZURRO (139).—Toledo ; CAZURRO, Act. Soc. Esp. xvii, p. 44.—Cercadilla ; BOLIVAR, Act. Soc. Esp. xvii, pp. 42 & 46.—Burdeos ; BOLIVAR, Act. Soc. Esp. xvii, p. 35.—Sicily : RIGGIO (752) ; PAJNO, Nat. Sicil. viii, pp. 18 & 166.—Island of Lesina, Dalmatia ; NOVAK (627).

(h.) *Caucasus and Western Asia* [see also (a.) and (b.)].

Coleoptera. Caucasus : GANGLBAUER (303), LEWIS (505), REITTER (728).—Circassia ; REITTER (727).—Caspian ; KRAATZ (463).—Mesopotamia ; HEYDEN (375).—Asia Minor : HOPFFGARTEN (389) ; HEYDEN (374) ; HEYDEN & FAUST (377).—W. Asia : GANGLBAUER (302) ; KRAATZ (457, 464) ; SEMENOW (831) ; GANGLBAUER (305).—Turkestan ; SEMENOW (832, 833).—Alai Mountains ; HEYDEN (373).—Central Asia : BRENSKE (104) ; EFFELSHEIM (234) ; FAUST (260).—Thibet : JANSON (420) ; OLIVIER (639) ; TSCHITSCHERINE (890).

Hymenoptera. RADOSZKOWSKI (700).

Lepidoptera. Syria ; JOANNIS (422).—Central Asia : ALPHERAKI (3) ; ERSCHOFF (235) ; GRUM-GRSHIMAILO (348) ; STAUDINGER (867).—Moupin ; POUJADE (680).

Diptera. CAUCASUS ; MIK, Wien. ent. Z. vii, p. 140.

Rhynchota. Armenia ; REUTER (738).

Orthoptera. Central Asia ; DOHRN (199).

4. AFRICA (ETHIOPIAN REGION).

Insecta. PÉRINGUEY (665).

Coleoptera. ALLARD (1, 2), AURIVILLIUS (33), BATES (46), DOHRN (198), FAIRMAIRE (240, 241, 244, 250), FAUST (260), GAHAN (297), GORHAM (322), JACOBY (410), JANSON (420) ; KOLBE, *Brentidae* (451) ; KRAATZ (459, 460, 462). MARSEUL (554) OLIVIER (641), PASCOE (660), PÉRINGUEY (664, 667), QUEDENFELDT (694, 695, 696), WATERHOUSE (914, 915), WEISE (921, 922).—Liberia, *Cetoniidae* ; RIJSEMA, Tijdschr. Ent. xxxi, pp. lxxx & lxxxi.

Hymenoptera. KOHL (442), MEUNIER (589, 590).

Lepidoptera. BUTLER (113, 114, 115, 117), DRUCE (209, 210), HEYLAERIS (378), MABILLE (541), MÖSCHLER (618), OBERTHÜR (629), RAGONOT (702), ROGENHOFFER (776), STAUDINGER (868), WALKY, P. E. Soc. 1888, p. xxxv.

Diptera. BERGROTH (60), BIGOT (69).

Rhynchota. BERGROTH (61), DOUGLAS (202), FERRARI (269).

Neuroptera. GERSTAECKER (306).—*Odonata* ; KUREY, P. E. Soc. 1888, pp. xiii & xiv.

Orthoptera. BRUNNER (112), DOHRN (199), KARSCH (427, 428, 429, 430, 431), SAUSSURE (791, 792).

5. MADAGASCAR, MASCARENE ISLANDS, SEYCHELLES.

Coleoptera. ALLARD (2), FAIRMAIRE (251, 252), FAUST (260), JACOBY (410), KÜNCKEL (328, 480), PASCOE (659, 660), QUEDENFELDT (695), PÉRINGUEY (668), WEISE (921).

Lepidoptera. MABILIE (540), RAGONOT (702). — Grande-Comore ; OBERTHUR (630).—Réunion ; OBERTHUR (629).

Rhynchota. FERRARI (269).

Neuroptera. HAGEN (360).

Orthoptera. BRUNNER (112), SAUSSURE (792). — Madagascar and Seychelles ; KARSCH (428).

6. TROPICAL AND EASTERN ASIA AND JAPAN. [FOR THIBET and MOUPIN see 3 (h.).]

Insecta. Burma ; GESTRO (307).

Coleoptera. ALLARD (1, 2).—BALY (39) and Burma (38) ; Andaman Is. and Sikkim (40).—BATES : Korea (44) ; China (45).—BOURGEOIS (93).—CANDÈZE, Burma (131).—DOKHTOUROFF, China and Mongolia (201).—FAIRMAIRE (243, 245, 247) ; India (246) ; China (238, 253) ; Pekin (242, 249).—FAUST (260) ; GAHAN (294, 295, 296, 297, 298).—GESTRO, Burma (308).—GROUVELLE (346) ; Burma (345).—JACOBY, China (412).—JANSON, Loo Choo Is. (418).—KERREMANS, India (435).—KRAATZ, Korea (465).—LEFÈVRE, India (493).—LÉVEILLÉ (503) ; Burma (501).—LEWIS, Burma (504) ; Japan (505, 508, 509, 510, 511), and Ent. M. M. xxv, p. 94.—OLIVIER (638) ; India (641).—PASCOE (659, 660).—RÉGIMBART, Burma (718).—REITTER, China (732).—RITSEMA, Ceylon (765).—SCHÖNFELDT, Japan (813, 814, 815)—SHARP, Japan (835, 836).—TACZANOWSKI (878).—WATERHOUSE (915) ; Loo Choo Is. (915).

Hymenoptera. CAMERON (127, 128).—HANDLIRSCH (367) ; Korea (368).—KOHLE, Japan (442).—RADOSZKOWSKI, India (701).

Lepidoptera. ALPHERAKI (3).—BUTLER : India (118, 119) ; Formosa (113).—COTES & SWINHOE, India (170).—DRUCE, Loo Choo Is. (208).—ELWES, catalogue of Sikkim *Rhopalocera* (227).—LEECH : Japan and Korea (491) ; China. P. E. Soc. 1888, p. iv.—MEYRICK, China, Tr. N. Z. Inst. xx, p. 47.—MOORE, India (611, 612).—NICEVILLE, India (623).—RAGONOT (702, 704), STAUDINGER (868), WALSINGHAM (907).—WARREN, India (910).

Diptera. BIGOT (70) ; Ceylon (72).

Rhynchota. ATKINSON, India (28).—BERGROTH (61), DISTANT (186, 187, 188, 189). FERRARI (269).—FALLOU : China (258) ; Pekin, Rev. d'Ent. vii, p. 110.—REUTER, Pekin (749).

Neuroptera. GERSTAECKER, China (306).—SELYS, Loo Choo Is. (828).

Orthoptera. BORMANS (88), BRUNNER (112), SAUSSURE (792).

7. ASIATIC ARCHIPELAGO AND PAPUA.

Insecta. Christmas I., BUTLER (116), GAHAN (299), KIRBY (439).

Coleoptera. ALLARD (1, 2), BALY (39).—DOHRN, Borneo (197).—FAIR-

MAIRE (243, p. 366); Sumatra (248).—FAUST (260).—GAHAN (295); Nias I., Borneo, N. Guinea (294).—GORHAM (322); Sumatra (323).—JANSON, Jolo I. (419).—KRAATZ, Philippines (467).—MASTERS, N. Guinea (561).—PASCOE (659, 660).—RITSEMA (766, 768); Java (765); Sumatra (764, 767).—WEYERS, Sumatra, C.R. ent. Belg. xxxii, p. xxxiv.

Lepidoptera. DRUCE (207); Celebes (208).—GOSS, New Guinea, P. E. Soc. 1888, pp. x & xi.—HEYLAERTS, Sumatra (379).—HONRATH, Borneo and N. Guinea (385).—MABILLE (542).—PAGENSTECHER, Amboyna (653).—PIEPERS, Java (672).—RÖBER, Islands of Luang, Letti (771).—SEMPER, Philippines (834).—SNELLEN, Java, Sumatra (855).—STAUDINGER (868).—PALAWAN (865).—WESTWOOD, Celebes (926).

Diptera. BIGOT (69).

Rhynchota. BERGROTH (61).—DISTANT (186, 187, 188, 190); N. Guinea (185).—FERRARI (269).—KARSCH, Java (432).—LETHIERRY, Sumatra and Nias (498).—WATERHOUSE, Java (916).

Neuroptera. GERSTAECKER, Ceram, N. Guinea (306).

Orthoptera. BRUNNER (112).—DOHRN, Palawan (200).—KAESCH, Java, Celebes, N. Guinea (431).

8. AUSTRALIA AND TASMANIA.

Insecta. SKUSE (842).

Coleoptera. BALY (39); BLACKBURN (73, 74, 75, 76, 77, 78) and Tr. R. Soc. S. Austr. p. 302; FAUST (260), FOWLER (283), MACLEAY (544, 545, 546, 547), OLIVIER (641), PASCOE (660), SLOANE (846).

Hymenoptera. CAMERON (127).

Lepidoptera. LUCAS: (530), and notes on Victorian and Queensland *Lepidoptera*; Vict. Nat. v, pp. 23-27.—MEYRICK (586, 587, 588); OLLIFF, (632, 633, 635, 637) and P. Linn. Soc. N.S.W. (2) iii, p. 401; RAGONOT (702); STAUDINGER (868).

Diptera. BIGOT (70), SKUSE (841), WILLISTON (936).

Rhynchota. BERGROTH (61).

Orthoptera. BRUNNER (112), DE SAUSSURE (792).

9. NORTH AMERICA.

Insecta. Insects common to Europe and Colorado; COCKERELL, Ent. M. M. xxv, p. 67.—Faunal limits; HULST (407).—PACKARD, Labrador (650).—COCKERELL, Colorado, Ent. xxi, pp. 298-305. —SCHWARZ, Columbia, P. E. Soc. Wash. i, p. 55.—LUGGER, Baltimore, P. E. Soc. Wash. i, p. 61.—GEDDES, Some remarkable captures in Ontario; Rep. E. Soc. Ont. xviii, pp. 21-23.—HOLLAND, Captures made while travelling from Winnipeg to Victoria; Canad. Ent. xx, pp. 89-92.—SNOW, Lists of *Lepidoptera* and *Coleoptera* collected in New Mexico by the Kansas University Scientific Expeditions of 1883 and 1884; Tr. Kansas Ac. ix, pp. 65-69.—*Entomophthora* of United States; THAXTER (882).

Coleoptera. BELON (55), BLANCHARD (83), BRENDÉL (102, 103).—CASEY (137); and San Francisco, P. E. Soc. Wash. i, p. 46.—CHAMPION (319).—COCKERELL, Colorado, Ent. M. M. xxv, p. 164.—DIETZ, New

Jersey, Ent. Am. iv, p. 23.—DURY, Ohio, Ent. Am. iv, p. 163.—GAHAN & HORN (300).—HAMILTON (364); and Pennsylvania, Canad. Ent. xx, p. 9.—HENSHAW, Massachusetts, Psyche, v, p. 136.—HORN (391, 392, 394), JACOBY & HORN (413).—JÜLICH, Long I., Ent. Am. iv, p. 35.—KNAUS, Kansas, Tr. Kansas Ac. ix, pp. 57–61 & 64.—LÉVEILLÉ (503).—LIEBECK, Pennsylvania, Ent. Am. iv, p. 74.—LUGGER, Bahamas, P. E. Soc. Wash. i, p. 57.—MACPHERSON, Kansas, Tr. Kansas Ac. x, pp. 86–88.—OLIVIER (641).—SCHWARZ, Ent. Am. iii, p. 199; Virginia, P. E. Soc. Wash. i, p. 58; Michigan, P. E. Soc. Wash. i, p. 75; Washington, P. E. Soc. Wash. i, p. 80; Florida, (819) and P. E. Soc. Wash. i, pp. 89, 93, 104, & 113.—SIERMAN, New York, P. E. Soc. Wash. i, p. 79.—SMITH (853); WEEKS, Ent. Am. iii, pp. 188 & 194.—WESTCOTT, Illinois, Ent. Am. iv, p. 156.

Hymenoptera. ASHMEAD (16, 17, 18, 22, 23, 24, 25), CAMERON (127), CRESSON (171), FORBES (279), HANDLIRSCH (367), HOWARD (399, 400, 401), KOHL (444), MACFARLAND (543), MARLATT (551), PROVANCHER (686), RILEY (762), WEED (918, 920).

Lepidoptera. BEUTENMÜLLER (64), COCKERELL (155).—DRUCE, Bahamas (207).—DUZEE, Canad. Ent. xx, p. 100.—EDWARDS, H. (219, 220, 221, 222).—EDWARDS, W. H. (223, 224, 225): and three species of moths new to our fauna; Canad. Ent. xx, pp. 12–15, 111–113, & 128; Ent. Am. iv, p. 63.—FERNALD (265, 266, 267).—FRENCH (286).—GRAEFE, (326) and Ent. Am. iv, p. 163.—GROTE (343); and wind-visiting moths; Canad. Ent. xx, pp. 98–100.—GUMPENBERG (350).—HULST (404, 405, 406); and "A Summer Trip to Southern California"; Ent. Am. iii, pp. 189–191.—MOFFAT, Canada, Canad. Ent. xx, p. 178.—RAGONOT (702, 703, 707).—SCUDDER (820).—SILVER, list of Nova Scotian Butterflies; P. N.-Scot. Inst. vii, pp. 86–88.—SMITH (848, 849, 850, 851, 852).—TAYLOR, British Columbia, Rep. E. Soc. Ont. xviii, p. 24.—WALSINGHAM (908).—WEEKS, White Mountains, Ent. Am. iv, pp. 123 & 124.—WRIGHT (940).—Yellowstone Park; P. E. Soc. 1888, pp. xxix–xxxi.

Diptera. BERGROTH (59), BIGOT (69, 70, 71), RILEY (755), WILLISTON (934, 935).

Rhynchota. ASHMEAD (26), DOUGLAS (202).—OSBORN, Iowa, P. E. Soc. Wash. i, p. 35.—POPENOE, Contributions to a knowledge of the Hemiptera-fauna of Kansas; Tr. Kansas Ac. ix, pp. 62–64.—PROVANCHER (685), RILEY (756), UHLER (894), WOODWORTH (939).—*Cicada septendecim*, in 1888, Ins. Life, i, p. 31.

Neuroptera. HAGEN (359, 360).—MAYNARD, notes on the White Ant found on the Bahamas; Psyche, v, pp. 111–113.

Orthoptera. BRUNNER (112).—CAULFIELD, Canada (138).—FERNALD (268).—SAUSSURE (792).

10. CENTRAL AMERICA, INCLUDING MEXICO.

Insecta. GODMAN & SALVIN (319).

Coleoptera. GAHAN (297), JANSON (421), LÉVEILLÉ (503).

Hymenoptera. CAMERON (128), HANDLIRSCH (367 368), KOHL (442, 444).

Lepidoptera. BEUTENMÜLLER (64), DRUCE (207), EDWARDS (219), MABILLE (542), RAGONOT (702), STAUDINGER (868).

Diptera. BIGOT (69, 70, 71).

Rhynchota. BERGROTH (61), DUGÈS (212), FERRARI (269).

Neuroptera. GERSTAECKER (306), PARONA (657).

Orthoptera. BRUNNER (112).—KARSCH, St. Salvador (? the American) (431).—SAUSSURE (792).

11. ANTILLES. [BAHAMAS, see N. AMERICA; TRINIDAD, see S. AMERICA.]

Insecta. SCHWARZ (817).

Coleoptera. FISCHER (276), and Porto Rico (275).—LÉVEILLÉ, Jamaica, Saint Domingo (503).—LEWIS (319, p. 237), OLIVIER (641).

Lepidoptera. RAGONOT (702, 703), and Porto Rico (706).

Diptera. BIGOT, Cuba, Haity (70), and Haity (71).—WILLISTON, San Domingo (934).

Rhynchota. BERGROTH, Cuba (61).

Neuroptera. KOLBE (445).

Orthoptera. BOLIVAR, Cuba (86).—BRUNNER (112).

12. SOUTH AMERICA.

Coleoptera. BATES (319).—BORRE, Liste des *Passalides* recueillis en 1872, par feu C. Van Volxem pendant son Voyage au Brésil; C.R. ent. Belg. xxxii, pp. xli & xlii.—BOURGEOIS (94, 95, 96, 97).—FAIRMAIRE, Terra del fuego (239).—FAUST (260), FAUVEL (264), FISCHER (274), GAHAN (297).—GÖLDI, Guiana, Soc. Ent. ii, pp. 187-189.—GROUVELLE (346), HAASE (352), JACOBY (411), KRAATZ (458), LEFÈVRE (492, 493), LÉVEILLÉ (503), OLIVIER (640, 641), PASCOE (660).—PHILIPPI, Catalogue of the *Coleoptera* of Chili (670).—RÉGIMBART (719, 720), REITTER (725.)

Hymenoptera. CAMERON (127, 128), EMERY (231), MEUNIER (594, 597), MOCSÁRY (605).—PROVANCHER, Trinidad (686).—HANDLIRSCH (367, 368), HOLMBERG (382, 383).

Lepidoptera. BARTLETT-CALVERT, Chili (43).—DOGNIN (194, 195, 196), DRUCE (208), HONRATH (385).—MABILLE (542), and Cape Horn (537).—OBERTHUR (629), RAGONOT (702), STAUDINGER (868).

Diptera. BIGOT (67, 69, 70), and Cape Horn (66).—REED, catalogue of the *Diptera* of Chili (716).—WILLISTON (932, 933), WULF (941).

Rhynchota. BERGROTH (61), DISTANT (191), DOUGLAS, Ent. M. M. xxv, p. 151, FERRARI (269), FALLOU (256, 257), HORVATH (395).—SIGNORET, Cape Horn (840).

Neuroptera. BERGROTH, *Thysanoptera* (62).—GERSTAECKER (306).—MABILLE, Cape Horn (538).

Orthoptera. BOLIVAR (86), BRUNNER (112), DOHRN (199, 200), SAUSSURE (792).

PALÆO-ENTOMOLOGY.

KUSTA (482); and Fossil Arthropods of Rakonitz (481).—The insects of the Solenhofen lithographic stone; DEICHMÜLLER (178), OPPENHEIM (642).—SCHLECHTENDAL, revision of the Bernstein insects described by Germar & Giebel (802).—WOODWARD (938).—BELL, post-glacial insects; Ent. xxi, pp. 1 & 2.—Insects in amber; SCHAUFUSS (795).

COLEOPTERA.

Protoscalidion, n. g., *Carabiidarum*, for *P. rugiae*, n. sp., in amber, from the Baltic; SCHAUFUSS, B. E. Z. xxxii, p. 266.

Procarabus zitteli, p. 236, pl. xxxi, fig. 14, *reticulatus*, fig. 28, *tripartitus*, fig. 12, p. 237, Solenhofen, OPPENHEIM, Palæontogr. xxxiv, n. spp.

Chlenius solitarius, Solenhofen, DEICHMÜLLER, p. 65, pl. v, fig. 8, MT. min. geol. Mus. Dresden, vii, n. sp.

Amara (?) *pseudo-zabrus*, Solenhofen, DEICHMÜLLER, p. 65, pl. v, fig. 9, MT. min. geol. Mus. Dresden, vii, n. sp.

Prodytiscus eichstaettensis, Solenhofen, OPPENHEIM, p. 238, pl. xxxi, figs. 19 & 20, Palæontogr. xxxiv, n. sp.

Pseudohydrophilus, n. g. (*Hydrophilidae*), p. 66, for *P. longispinosus*, n. sp., Solenhofen, p. 67, pl. v, figs. 10–12; DEICHMÜLLER, MT. min. geol. Mus. Dresden, vii.

Bembicidioides, n. g., *Staphylinidarum*, for *B. inaequicollis*, n. sp., in amber, from the Baltic; SCHAUFUSS, B. E. Z. xxxii, p. 267.

Oryctites fossilis, Solenhofen, OPPENHEIM, p. 238, pl. xxxi, fig. 2, Palæontogr. xxxiv, n. sp.

Geotrupes lithographicus, Solenhofen, DEICHMÜLLER, p. 69, pl. v, fig. 13, MT. min. geol. Mus. Dresden, vii, n. sp.

Progeotrupes jurassicus, Solenhofen, OPPENHEIM, p. 239, pl. xxxi, fig. 17, Palæontogr. xxxiv, n. sp.

Silphites cetoniiformis, fig. 16, *angusticollis*, fig. 6, Solenhofen, OPPENHEIM, p. 239, pl. xxxi, Palæontogr. xxxiv, n. spp.

Eurythrea grandis, Solenhofen, DEICHMÜLLER, p. 70, pl. v, fig. 14, MT. min. geol. Mus. Dresden, vii, n. sp.

Buprestites suprajurensis, Solenhofen, OPPENHEIM, p. 240, pl. xxxi, fig. 21, Palæontogr. xxxiv, n. sp.

Ekaterites priscus, fig. 5, *robustus*, fig. 22, Solenhofen, OPPENHEIM, p. 241, pl. xxxi, fig. 22, Palæontogr. xxxiv, n. spp.

Mycetocharoides, n. g., *Cistelidarum*, for *M. baumeisteri*, n. sp., in amber, from the Baltic; SCHAUFUSS, B. E. Z. xxxii, p. 269.

Pyrochroa brevipes, Solenhofen, DEICHMÜLLER, p. 72, pl. v, figs. 17 & 18, MT. min. geol. Mus. Dresden, vii, n. sp.

Cerambycites minor, Solenhofen, DEICHMÜLLER, p. 74, pl. v, fig. 20, MT. min. geol. Mus. Dresden, vii, n. sp.

Chrysomelites jurassicus, fig. 25, *minimus*, fig. 23, pl. xxxi, p. 242, Solenhofen, OPPENHEIM, Palæontogr. xxxiv, n. sp.

Galerucites carinata, Solenhofen, p. 242, pl. xxxi, fig. 26, OPPENHEIM Palæontogr. xxxiv, n. sp.

Traces of insects in fossil wood: KOLBE (452) mentions *Anthrribites rechenbergi*, n. sp., p. 184, pl. xi, fig. 1, *Astynomus tertiaris*, n. sp., p. 185, pl. xi, fig. 5, *Curculionites senonicus*, n. sp., p. 186, pl. xi, fig. 5, and a problematic Tomicid.

HYMENOPTERA.

Rhipidorhabdi discussed; OPPENHEIM, pp. 243-247, Palæontogr. xxxiv

RHYNCHOTA.

Sphaerodema jurassicum, Solenhofen, OPPENHEIM, p. 235, pl. xxxi fig. 10, n. sp.

Ischyopteron, n. g. (*Geocoridae*), p. 229, for *I. suprajurensis*, n. sp., Solenhofen, p. 230, pl. xxx, fig. 7; OPPENHEIM, Palæontogr. xxxiv.

Notonecta elterleini, Solenhofen, DEICHMÜLLER, p. 64, pl. v, fig. 7, MT min. geol. Mus. Dresden, vii, n. sp.

Naucoris carinata, Solenhofen, OPPENHEIM, p. 235, pl. xxx, fig. 14 Palæontogr. xxxiv, n. sp.

Halometra, n. g. (*Hydrometridae*), for *Pygolampis gigantea*, Germ. figured, p. xxxi, fig. 18, p. 230, and *H. ? minor*, n. sp., Solenhofen, p. 232 pl. xxxi, fig. 4; OPPENHEIM, Palæontogr. xxxiv.

Eocicada microcephala, Solenhofen, OPPENHEIM, p. 229, pl. xxxi, fig. 3 Palæontogr. xxxiv, n. sp.

Prolystra lithographica, Solenhofen, OPPENHEIM, p. 228, pl. xxxi, fig. 1 Palæontogr. xxxiv, n. sp.

NEUROPTERA.

Ephemera speciosa, pl. xxx, fig. 13, *E. ? multinervosa*, p. 225, from Solenhofen, OPPENHEIM, Palæontogr. xxxiv, n. spp.

Protolindenia, n. g. (*Gomphina*), for *Æschna wittei*, Gieb.; DEICHMÜLLER, p. 37, MT. min. geol. Mus. Dresden, vii.

Cymatophlebia, n. g. (*Gomphina*), for *Libellula longiolata*, Germ. DEICHMÜLLER, p. 49, MT. min. geol. Mus. Dresden, vii.

ORTHOPTERA.

Oryctoblattina arndti, Plattelkohle Pilsen, n. sp., KUSTA, SB. böhm Ges. 1888, p. 387-393.

Pycnophlebia, n. g., *Acridiidae*, p. 20, for *Locusta speciosa*, Germ. DEICHMÜLLER, MT. min. geol. Mus. Dresden, vii.

Cyrtophyllites, n. g., *Locustidae*, p. 222, for *C. rogeri*, n. sp., Solenhofen p. 223, pl. xxx, fig. 5, Palæontogr. xxxiv.

Conocephalus capito, Solenhofen, p. 24, pl. 2, fig. 12, DEICHMÜLLER, MT min. geol. Mus. Dresden, vii, n. sp.

Gryllacris propinqua, Solenhofen, p. 26, pl. ii, figs. 9 & 10, DEICHMÜLLER MT. min. geol. Mus. Dresden, vii, n. sp.

IV.—ECONOMIC.

Reports : BROWN (110), COTES (169), HOWARD* (402), MACMILLEN (549), ORMEROD (644, 645), RILEY (754).

On matters of international interest; RILEY (761).—Injurious insects in Italy in 1887; TARGIONI-TOZZETTI (879).—Insects injurious to tobacco in Bessarabia; LINDEMAN (513).—Insects injurious to wheat; SHIPLEY (837): to vines; SHIPLEY (838)—PÉRINGUEY, forest trees in S. Africa (665); *id.*, *Phylloxera* (666).—Results of the campaign against *Melolontha* in 1887; Bull. Ins. Agric. xiii, p. 101, also *t. c.* pp. 165–170.—Paprikában élő rovarok; HORVATH, Term. Közöny, 1888, pp. 111 & 112.—*Cecidomyia destructor*; FREEM (285).—Hessian-fly on wild grasses; LINDEMAN (515).—*Diplosis pyrivora*, Riley, habits, &c.; MEADE (565).—Tabelle zum Bestimmen der dem Rettig, Raphanus sativus, und dem Radieschen, Raphanus radiola, schädlichen Insekten; HESS, JB. Ges. Hannover, 1883–87, pp. 66–68.—Sugar-cane borer; RILEY & HOWARD (763).—Ravages of locusts; MOCSÁRY* (610).—Ravages of locusts in Algeria; Ins. Life, i, p. 92 [from Revue horticole, July, 1888].—*Stauronotus maroccanus* and its destruction in Algeria; KUNCKEL (479).—Ravages of *Orthoptera* in the Var; Bull. Ins. Agr. xiii, p. 97.—Ravages of *Orthoptera* in Sétif; Bull. Ins. Agr. xiii, p. 61.—Ravages of *Bruchus rufimanus* in Essex; FITCH, Ess. Nat. ii, pp. 48–50.—Insects destructive to castor-oil plant; WOOD-MASON (937).—Cut-worms; LINTNER (516).—Maize destroyed by *Conogethes punctiferalis*, Gn.; BANCROFT (41).—*Lachnosterna fusca*, larva, ravages, remedies, &c.; LINTNER (517).—*Phorodon humuli*; RILEY (753).—*Dermestes bicolor* injurious to pigeons; NOIL (626).—*Silpha opaca* destroying beet; GIARD (309, 310); see also MÉGNIN, La Nature, xvi, p. 155.—Études sur les ravages de la *Silpha opaca*; Bull. Ins. Agr. xiii, p. 87: parasite noticed; *t. c.* p. 116.—*Silpha opaca* and its parasite; DECAUX, Feuille Nat. xix, p. 20.—*Atomaria linearis* destroying mangold; FITCH, Ess. Nat. ii, p. 255.—*Atomaria linearis* injurious to beet; Bull. Ins. Agr. xiii, p. 118.—*Carpocapsa pomonana* in Tasmania; RAYNOR, Ent. xxi, p. 159.—Insects injurious to *Esculus hippocastanum*; DECAUX (177).—*Crypturgus pusillus* destroying larches; Ent. Nachr. xiv, p. 271.—*Colobathristes saccharicida* destructive to sugarcane in Java; KARSCH (432).—*Depressaria heracleiana*, injuries and remedies; RILEY (759).—*Depressaria nervosa*, prevention of ravages; Ent. Nachr. xiv, p. 347.—Injuries to willows by *Nematus ventralis*; HOWARD, Ins. Life, i, pp. 33–37.—Books and papers injured by cockroaches; Ins. Life, i, pp. 67–70.—Injuries to privet by *Margarodes quadristigmatis*; Ins. Life, i, pp. 22–26.—*Phyllæus integer*, Nort., its damages to willows; RILEY, Ins. Life, i, p. 8.—*Mesograpta polita*, Say, its attacks on corn; Ins. Life, i, p. 5.—The sugar-cane beetle injuring corn; HOWARD, Ins. Life, i, pp. 11–13.—Ravages of *Agrilus auricollis* on limes; WACHTEL (901).—Attacks of *Chlorops glabra*, M., on *Curum carui*; KÜHN (478).—*Saturnia pyri* injurious to fruit trees; BERTHELIN, Bull. Soc. Ent. Fr. (6) viii, p. clvi.—Injury to asparagus by *Otiorthynchus ligustici*; LABOULENNE, Bull. Soc. Ent. Fr. (6) viii, p. cv.—Ravages of *Ephesia kühniella*

in London ; KLEIN, Tr. Middl. Soc. 1887-88, pp. 16-20.—Note on the rice-juice sapper of Madras (*Leptocoris acuta*, Thunb.) ; ATKINSON (27).—Ravages of *Calandra oryzae* on wheat and rice in India ; COTES (167).—*Cryptorhynchus mangifera*, ravages, &c. ; SIMMONS (843).—*Hylastes trifolii*, Mull., ravages in Canada ; WHITE, Canad. Ent. xx, p. 138.—Ravages of *Xystrocera globosa* on *Albizzia lebbek* ; KOLBE (448) ; KRAATZ, Deutsche e. Z. xxxii, p. 334 ; B. E. Z. xxxii, p. 15 ; ANDERLIND, Wien. ent. Z. vii, p. 275 ; also B. E. Z. (S.B.) p. (20).—*Phylloxera* and diseased vines ; CHAVÉE-LEROY (142).—For several notes on *Phylloxera*, see "Viticulura," in index, C.R. cvi & cvii.—*Lucanus* destroying railroad ties : LOCKWOOD (518).

Anthræa mylitta, diseases of larva ; DUMAINE (213).—Gas treatment for scale insects ; COQUILLET, Ins. Life, i, p. 41.—Kerosene emulsion as a remedy for white grubs ; Ins. Life, i, pp. 48-50.—Insecticides ; TARGIONI-TOZZETTI & BERLESE (880).—Insecticides in India ; COTES (168).—Destruction of insects by insecticide fungi ; LABOULBÈNE, Bull. Soc. Ent. Fr. (6) viii, pp. ci & cxix, and GAZAGNAIRE, t. c. p. cii.—Destruction of injurious insects by the use of vegetable parasites ; KRASSILSTCHIK (469).—Use of *Entomophthora* for destroying injurious insects ; BROGNIART (109).—*Valgus hemipterus*, prevention of injuries ; FALLOU, Bull. Soc. Ent. Fr. (6) viii, p. xviii.—Remedy for rose-*Aphis* ; GROTE, Canad. Ent. xx, p. 160.—Relations between *Lasius niger* and *Aphis papaveris*, and influence on *Vicia faba* ; BOS (91).—*Huechys sanguinea*, medical properties of ; FUMOUEZ (291).—Annual value of insect products ; B. E. Z. xxxii, (S.B.) p. (11).—The laboratory of experimental entomology at Cornell University ; COMSTOCK (159).—List of recent Italian memoirs on economic entomology ; Bull. Ent. Ital. xx, pp. 248-255.

Silk : Silk-production ; FALLOU (255), LABOULBÈNE (489).—Note on the history of silk-production ; HAHN, B. E. Z. xxxii, (S.B.) pp. (13-17).—Silk and silkworm in China ; TCHENG-KI-TONG (881).—Culture of the silkworm, and silk-industry in Asia Minor ; COCHRAN (154).—Silk of *Bombyx mori* in the organism ; RAULIN & SICARD (714) : colouring matter of ; BLANC (81).—Insects injurious in sericulture ; Bull. Ins. Agr. xiii, p. 57.

Beekeeping : CHESHIRE (143).

Insects and flowers : KRONFELD (477), SAUNDERS (789).—*Pronuba puccasella*, &c. ; MEEHAN (570).—Edible insects : CAMBOUÉ (125), FABRE-DOMERGUE (237).—*Deilephila lineata*, F. ; HULST, Ent. Am. iii, p. 219.

Insects attacking man : BRANDT (98), MEINERT (572), MATAS (562).—BECKER, *Diptera* (49).

Pulex serraticeps as host of *Tonia cucumerina* ; GRASSI (333).—*Blaps* as intermediate host of *Echinorhynchus* ; GRASSI & CALANDRUCCIO (334).

Collections : Suggestions to teachers on collecting and preserving insects ; CLAYPOLE, Rep. E. Soc. Ont. xviii, pp. 19-21.—Mode of rearing *Lepidoptera* ; SOULE, Psyche, v, p. 137.—Some methods of moth-collecting ; BOWYER, Tr. Hertf. Soc. v, pp. 23-32.—Mode of caging butterflies to obtain eggs ; FLETCHER, Canad. Ent. xx, p. 234.—Sammeln

von Schmetterlingen in tropischen Ländern ; B. E. Z. xxxii, pp. 1-4.—Cyanide collecting-bottle ; WEYERS, C.R. ent. Belg. xxxii, pp. xxxviii-xli ; BORMANS, t. c. pp. xliii-xlv.—Preservation of transparent insects for microscope ; LUGGER (535).—Mode of taking impressions of butterflies on paper ; MAINDRON, La Nature, xvi, pp. 285 & 286.—Museum pests : some observations on ; SMITH, P. E. Soc. Wash. i, pp. 113-115.—*Coccidæ* : mode of removing wax ; HOWARD, Ins. Life, i, p. 152.—Preparation of wings for exhibition of neurulation ; HOWARD, Ins. Life, i, p. 151.—The use of naphthaline ; SMITH, Ent. Am. iii, p. 200.—Eau de javelle for dissolving chitin, &c. ; DEWITZ, Ent. Nachr. xiv, p. 317.—Entomological collections in the United States ; SMITH, Ent. Am. iv, pp. 102-112 & 125-134.—Das deutsche entomologische National-Museum ; KRAATZ, Deutsche e. Z. xxxii, pp. 17-20.—Particulars of progress in ent. department of the Vienna Museum ; Ann. Hofmuseum Wien, Notizen JB. 1887, pp. 12-14.—The number of species of *Arthropoda* contained in the Belgian Museum ; BORRE, C.B. ent. Belg. xxxii, p. xii.

V.—BIBLIOGRAPHY, NOMENCLATURE, BIOGRAPHY.

1. *Bibliography.* List of recent works relating to entomology of Italy ; Bull. Ent. Ital. xx, pp. 223-242.—Publicazioni di entomologia applicata ; Bull. Ent. Ital. xx, pp. 248-255.—List of works on the anatomy of *Thysanura* and *Collembola* ; OUDEMANS (649).—List of works on *Hemiptera-Heteroptera* ; REUTER (736).—Contribution to American bibliography of insect diseases ; Psyche, v, pp. 15-20, 45, & 46.—Bibliographical list of writings on viviparous *Aphididæ* ; WILL (930).—"Papers and records published with respect to the natural history and physical features of the North of England." *Lepidoptera*, 1885-1887 ; Naturalist, 1888, pp. 58-77. *Hymenoptera*, 1884-1887 ; t. c. pp. 153-155. *Coleoptera*, 1884-1887 ; t. c. pp. 203-210. *Neuroptera*, *Trichoptera*, 1884-1887 ; t. c. pp. 285 & 286.—List of works relating to *Hymenoptera* of N. America ; CRESSON (171).—Bibliographical list of literature relative to *Blissus leucopterus* ; HOWARD, in Riley Rep. 1897, pp. 84-88.—List of papers on "Insect-frass" in fossil wood ; KOLBE (452).—"Les entomologistes et leurs écrits" suite ; MARSEUL, L'Abeille xxv : the names published in 1888 are Baran, p. 193 ; Von Harold, pp. 193-204 ; Léon Dufour, pp. 204-220 ; Kolenati, pp. 220-223 ; Rottenberg, pp. 223 & 224 ; Latreille, pp. 225-232 ; Audouin, pp. 232-236.—List of the entomological works of J. W. von Lansberge, and catalogue of the insects described in them ; RITSEMA (769).—Note on Calverley's "*Sphingidæ*" ; GROTE, Canad. Ent. xx, p. 80.—Note on a German edition of Ross's Second voyage ; GROTE, Canad. Ent. xx, pp. 157 & 158.—List of the species of *Coleoptera* described as new by Heer, with synonyms ; STIERLIN (874).—Note on the *Diptera* described by G. A. Olivier in 1813 ; MIK (601).—Notice of Spinola's Faunæ Liguriæ fragmenta, 1805 ; DALLA TORRE, Wien. ent. Z. vii, p. 249.—Index to Panzer's Fauna Ins. Germ. ; SAUNDERS (790).—Seidlitz's remark on the pedagogic and ethical importance of entomology, reprinted ; Deutsche e. Z. xxxii, pp. 33-38.

2. *Nomenclature*. PUTON (692).—Priority and rules of nomenclature discussed at length; REUTER (736).—Priority in generic names discussed; REITTER (723).—MIK, J., *Nomenclatorische Fehltritte*; SB. z.-b. Wien, xxxviii, pp. 64-67. A discussion on the emendation of generic names and other points of nomenclature.—Adjectival generic names; REITTER (722).—The use of generic names of Latin, and of adjectival construction, and the repetition of the generic name as the trivial name; SEIDLITZ (824).

3. *Biographical*. Obituary notes: John Thomas Boswell; Ent. M. M. xxiv, p. 235.—Geo. Bowles; Rep. E. Soc. Ent. xviii, p. 50.—Eugène Bellier de la Chavignerie; by RÉGIMBART, Ann. Soc. Ent. Fr. (6) viii, pp. 449-452; by SÉLYS-LONGCHAMPS, C.R. ent. Belg. xxxii, pp. xci & xcii; his collections acquired by OBERTHUR; Bull. Soc. Ent. Fr. (6) viii, p. clix.—Charles Darwin, by T. H. H.; P. R. Soc. xlv, pp. i-xxv.—Charles Donckier de Douceol, by SÉLYS-LONGCHAMPS; C.R. ent. Belg. xxxii, pp. liii-lv.—James English; Ent. xxi, p. 72.—William Farren; Ent. M. M. xxiv, p. 235, and Ent. xxi, pp. 71 & 72.—M. E. Glanville; Ent. xxi, p. 168.—P. H. Gosse, by H. B. B.; P. R. Soc. xlv, pp. xxvii & xxviii; also Ent. M. M. xxv, p. 113, and Ent. xxi, p. 264.—W. W. Hill; Ent. Am. iii, pp. 235 & 236.—Eduard Kreithner; Wien. ent. Z. vii, p. 116.—Notice necrologique sur M. Jean Pierre Milliére, par F. J. M. HEYLAERTS; C.R. ent. Belg. xxxii, pp. lxxiv-lxxvii.—H. J. S. Pryer; Ent. M. M. xxiv, p. 277, and Ent. xxi, p. 167.—John Sang, by ROBINSON, J. E.; Naturalist, 1888, pp. 52-54.—Johannes Schilde, by MÖSCHLER; S. E. Z. xlix, p. 315.—John Scott; Ent. M. M. xxv, p. 114, and Ent. xxi, p. 288.—George Robert Waterhouse; Ent. M. M. xxiv, pp. 233 & 234.—John Abbot, the Aurelian; SCUDDER, Canad. Ent. xx, pp. 150-154; and KIRBY, t. c. pp. 230-232.—Constant Bar und seine Verdienste um die Lepidopterologie; B. E. Z. xxxii, pp. 13 & 14.—Biography of A. T. Bruce (111).—Marc Catesby, the pioneer painter of N. American insects; HAGEN, Psyche, v, p. 134.—Biographical note on Townend Glover; DODGE, P. E. Soc. Wash. i, p. 60.—Memoir of George Robert Waterhouse, by C. O. WATERHOUSE, P. E. Soc. 1888, pp. lxx-lxxvi.—Thomas Say, tomb of; SCHWARZ, P. E. Soc. Wash. i, p. 81.—Dr. Carlet, presentation of prix Thore to, for his publications on anatomy and physiology of insects; C.R. evii, pp. 1076 & 1077.

VI.—SYSTEMATIC.

N.B.—The reference-numbers collected under the headings of the various groups refer to "Titles," and are intended to give a complete list of all memoirs containing anything of importance in connection with the group.

(A.) COLEOPTERA.

Fossil *Coleoptera*; DEICHMÜLLER (178), KOLBE (452), OPPENHEIM (642), cf. *Palæo-entomology*, p. 79.

CICINDELIDÆ.

[Cf. BATES (45), DOKHTOUROFF (201), GESTRO (307), MACLEAY (544), PÉRINGUEY (664, 667), QUEDENFELDT (694).]

Anal glands of *Cicindelida*; BRANDT (99).

Mantichora congoensis, Africa, PÉRINGUEY, p. 219, Ann. N. H. (6) ii, n. sp.

Platychile suturata, Walfish Bay, PÉRINGUEY, Tr. S. African Phil. Soc. iv, p. 67, n. sp.

Cicindela saxeseni, Endr., note on; KRAATZ, Ent. Nachr. xiv, p. 129. *C. hybrida* n. var. *korbi*, *gallica* n. var. *alpestris*, *campestris* n. var. *saxeseni*; BEUTHIN, Ent. Nachr. xiv, p. 81. *C. hybrida* n. var. *palpalis*, p. 139, *littoralis* n. var. *viridicærulea*, p. 140, *dokhtourowi* n. var. *fluctuosa* and *incisa*, p. 141; DOKHTOUROFF, Hor. Ent. Ross. xxii. *C. marginella*, Dej., var. *longula*; PÉRINGUEY, Tr. S. African Phil. Soc. iv, p. 68.

C. lobipennis, Kiu-Kiang, BATES, P. Z. S. 1888, p. 380; *C. potanini*, China, p. 139, *semenowi*, p. 142, *resplendens*, p. 143, Ordoss, *C. (Euryoda) lautissima*, China, p. 145, DOKHTOUROFF, Hor. Ent. Ross. xxii; *C. leucopicta*, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 157; *C. natalensis*, p. 69, *algoensis* (but this is said in Corrigenda to be *monteiroi*, Bates), p. 70, PÉRINGUEY, Tr. S. African Phil. Soc. iv; *C. albolineata*, *trivittata*, p. 444, *crassicornis*, *oblongicollis*, p. 445, *tenuicollis*, p. 446, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Dromica immaculata, S. Africa, p. 70, *foveolata*, Lake N'Gami?, p. 71, PÉRINGUEY, Tr. S. African Phil. Soc. iv, n. spp.

Ophryodera rufo-marginata n. var. *bradshawi*, *oberthuri*; PÉRINGUEY, pp. 220 & 221, Ann. N. H. (6) ii.

O. bohemani, Angola, PÉRINGUEY, p. 220, Ann. N. H. (6) ii, n. sp.

Therates concinnus, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 105, n. sp.

CARABIDÆ.

[*Cf.* BATES (44, 45, 46), BLACKBURN (73, 74, 75, 76, 77, 78), EVERETS (236), FAIRMAIRE (238, 239, 242, 243, 244, 247, 249, 251, 252), FAUVEL (262, 263), GANGLBAUER (631), GESTRO (307, 308), HEYDEN (374), HOPFFGARTEN (389), HORN (393, 394), KRAATZ (456), KRAATZ-KOSCHLAU (468), MACLEAY (544, 546), MINGAZZINI (608), ORMAI (643), PANTEL (656), PÉRINGUEY (664, 667), QUEDENFELDT (694), REITTER (724, 727), SCHAUPFUS (795), SÉMENOW (830, 831, 833), SLOANE (846), TACZANOWSKI (878), TSCHITSCHERINE (890).]

Omophron capense, Chaud., figured, pl. i, fig. 1; PÉRINGUEY, Tr. S. African Phil. Soc. iv. *O. capicola*, Chaud., = (*australe*, Pér.); *id. t. c.* rectifications, p. 191.

O. levigatus (sic), p. 172, *striaticeps*, p. 173, Burma, GESTRO, Ann. Mus. Genov. (2) vi, n. spp.

Notiophilus: sexual characters in; LESNE, Bull. Soc. Ent. Fr. (6) viii, p. cxlv.

Nebria pictiventris, Briançon, FAUVEL, Rev. d'Ent. vii, p. 220; *N. lederi*, Circassia, REITTER, Wein. ent. Z. vii, p. 81: n. spp.

Lissopterus hyadesi, figured, pl. i, fig. 1, and described, p. 6; FAIRMAIRE, Miss. Sci. Cap Horn, vi.

Migadops ovalis, Waterh., figured and described, p. 11, pl. i, fig. 5; FAIRMAIRE, Miss. Sci. Cap Horn, vi.

Leistus fulvibarbis = (*revelieri*, Muls.); HEYDEN, Wien. ent. Z. vii, p. 215.

Procrustes coriaceus, monstrosity; ECKSTEIN, B. E. Z. xxxii, p. 32, woodcut. *P. coriaceus*, L., *rugifer*, Kr., *spretus*, *rugosus*, *foudrasi*, *corispy*, Dej., *kindermanni*, *caraboides*, Waltl., *subrugosus*, *hopffgarteni*, Kr., discussed at length, considered to be all one species; GANGLBAUER, Deutsche e. Z. xxxii, pp. 383-397, and *cf.* KRAATZ, *t. c.* pp. 399 & 400.

Carabus monilis var. *kroni* var. *varicolor*; JOERIN-GERBER, MT. schw. ent. Ges. viii, p. 69. *C. auratus* var. noticed; LUCAS, p. xcix, Bull. Soc. Ent. Fr. (6) viii. *C. auratus* var. *brullei*, note on; BECKERS, Ent. Nachr. xiv, p. 17, and KRAATZ, Deutsche e. Z. xxxii, p. 23. *C. brevisculus*, Kr., is a variety of *glabratus*; KRAATZ, Deutsche e. Z. xxxii, p. 48. *C. burnascherii*, Dej., note on; FAIRMAIRE, Rev. d'Ent. vii, p. 111. *C. clathratus*, variation in Belgium; BORRE, C.R. ent. Belg. xxxii, p. xxxv: destroyed by *Frontina pacta*; MEINERT (577). *C. macleayi* n. var. *splendidulus*, p. 207, *guerini* n. var. *callisthenoides*, p. 208, *striatulus*, Gehin, described, p. 209, with n. var. *obscurior* and *progressus*, p. 210, *vicinus*, Sem., *dokhturowi*, Gangl., notes on, p. 211, *melanocheus*, Mor., = (*miles*, Sem.), p. 212; SÉMENOW, Hor. Ent. Ross. xxii. *Neoplectes reitteri*, note on, with n. var. *retowskii*; REITTER, pp. 20 & 21. *N. compressus*, p. 21, *prometheus* and *obtusius*, p. 22, n. var. of described; *id.* Wien. ent. Z. vii. *Plectes caucasicus*, Motsch., and *komarowi*, Reitt., distinguished; *id. t. c.* p. 104. *Tribus circasicus*, n. var. of; *id. t. c.* p. 24. *Megadontus exaratus*, *septemcarinatus*, n. var. of described; *id. t. c.* pp. 24 & 25. *Trachycarabus cribratus*, Quens., n. var. *remotus*; *id. t. c.* p. 25. *Crogllossus*

chiloënsis n. var. *suturelevatus*, p. 311, *gloriosus* var. *major incertus*, p. 312, *O. kraatzianus*, Mor., note on, p. 314; KRAATZ-KOSCHLAU, S. E. Z. xlix. *Ceroglossus*, synonymical discussion on species and varieties of; *id.* (468).

Carabus königi (Ganglb.), Circassia, REITTER, Wien. ent. Z. vii, p. 25; *C. decorus*, Transsylvania, SEIDL., Fauna trans., p. 14, Arten; *O. provocatii*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 111; *C. fea*, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 106; *C. (Plectes?) concinnus*, Turkestan, SEMENOW, Wien. ent. Z. vii, p. 246; *C. (Coptolabrus) angustus* with var. *ignimitella*, *Carabus kiukiangensis*, China, BATES, P. Z. S. 1889, p. 381; *C. (C) branickii*, Corea, TACZANOWSKI, p. 187, pl. xi, fig. 8, Hor. Ent. Ross. xxii; *Coptolabrus leechi*, Korea, BATES, P. Z. S. 1888, p. 369 : n. spp.

Oychrus convexus, Mor., note on; BERGROTH, Deutsche e. Z. xxxii, p. 222. *C. intermedius*, Hamp., synonymical note; HEYDEN, Wien. ent. Z. vii, p. 216. *C. æneus*, Fisch., var., = (*starcki*, Reitt.), and n. var. *ballionis*; RETOWSKI, Wien. ent. Z. vii, pp. 243 & 244.

C. starcki, Circassia, REITTER, Wien. ent. Z. vii, p. 19, n. sp.

Ophionea beaucheni, Tonkin, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii, p. 333, n. sp.

Casnonia opacipennis, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 107; *C. metallica*, Tonkin, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii, p. 334; *C. angusticollis*, p. 446, *globulicollis*, p. 447, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Eudalia, position of the genus; MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 447.

E. froggatti, *sublavis*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, pp. 448, n. spp.

Galerita rubens, Old Calabar, BATES, Ent. M. M. xxiv, p. 200, n. sp.

Gigadema froggatti, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 449, n. sp.

Ænigma parvulum referred to *Helluosoma*; MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 450.

Helluosoma longicolle, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 450, n. sp.

Zuphium pindan, p. 448, *fitzroyense*, p. 449, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Pheropsophus alstoni, p. 72, *latus*, p. 73, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, n. spp.

Brachinus promontorii, *instabilis*, S. Africa, PÉRINGUEY, p. 78, Tr. S. African Phil. Soc. iv, n. spp.

Styphlomerus rusticorum, Transvaal, PÉRINGUEY, p. 75, Tr. S. African Phil. Soc. iv, n. sp.

Crepidogaster pusillus, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, p. 76, n. sp.

Lipostratia cyaniventris, Damara land, FAIRMAIRE, p. 176, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Xanthophæa variabilis, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. sp.

Cymindis, characters of the Central-European species; GANGLBAUER, Soc. Ent. ii, pp. 161 & 162.

C. ganglbaueri, Circassia, REITTER, Wien. ent. Z. vii, p. 90; *C. densaticollis*, Pekin, FAIRMAIRE, p. cliv, Bull. Soc. Ent. Fr. (6) viii : n. spp.

Peliocypas uniformis, Tonkin, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii, p. 334, n. sp.

Metabletus vittatus, Motsch., = (*Dromius fedjezensis*, Mayet); BEDEL, Ann. Soc. Ent. Fr. (6) viii, p. 285.

Lebia celestis, p. 381, *chrysomyia*, *caligata*, *xanthophana*, p. 382, China, BATES, P. Z. S. 1888, n. spp.

Trigonothops fasciata, *pallidior*, p. 451, *ornata*, p. 452, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Sarothrocrepis dimidiata, *litturata*, *notata*, p. 453, *notabilis*, p. 454, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Plochionus humeralis, p. 454, *semivittatus*, p. 455, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Philophthalmus froggatti, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 455, n. sp.

Thyreopterus impressiusculus, Madagascar, FAIRMAIRE, Le Nat. (2) ii, p. 11, fig. 1, n. sp.

Nycteis semipicea, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 56, fig. 1, n. sp.

Eurydera tetraspilota, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 56, fig. 2, n. sp.

Scopodes sexfoveatus, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 456, n. sp.

Silphomorpha striatipennis, p. 456, *froggatti*, *laticollis*, *obsoleta*, *punctatissima*, p. 457, *centralis*, *ornata*, *flavicollis*, p. 458, *bivittata*, p. 459, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii; *S. spreta*, p. 805, *boops*, p. 807, N. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Adelotopus brevipennis, *elongatulus*, p. 459, *longipennis*, *levis*, *linearis*, p. 460, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Pseudozena spissicornis, Laos, FAIRMAIRE, p. 335, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Ditomis rotundicollis, habits; RICHARD, Feuille. Nat. xix, p. 20.

Graphipterus chaudiroidi, pl. i, fig. 2, p. 77, *ovatus*, *vittiger*, p. 78, *adamantinus*, p. 79, *angustus*, *montanus*, p. 80, *cursor*, p. 81, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv; *G. postfasciatus*, S. Africa, FAIRMAIRE, p. 176, Ann. Soc. Ent. Fr. (6) viii; *G. angolensis*, *velox*, Angola, PÉRINGUEY, p. 221, Ann. N. H. (6) ii : n. spp.

Anthia prasinis, p. 200, *pulcherrima*, p. 201, E. Africa, BATES, Ent. M. M. xxiv, n. spp.

Dyschirus multicostatus, p. 56, fig. 3, *rugulicollis*, p. 70, fig. 1, Madagascar, FAIRMAIRE, Le Nat. (2) i, n. spp.

Ctenides: the genera and subgenera tabulated, pp. 1103-1105, with remarks on classification and new characters; SLOANE, P. Linn. Soc. N.S.W. (2) iii.

Scaphites insulanus, p. 1106, *pacificus*, p. 1107, Australia, SLOANE, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Eurycephalus arenarius, p. 1108, *ferox*, p. 1109, Australia, SLOANE, P.

Linn. Soc. N.S.W. (2) iii ; *E. tatei*, p. 1, *subsulcatus*, p. 2, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x : n. spp.

Eurygnathus, n. g., p. 12, for *E. fortis*, n. sp., Australia, p. 13 ; BLACKBURN, Tr. R. Soc. S. Austr. x.

Epilectus, n. n. for the above *Eurygnathus* ; BLACKBURN, Tr. R. Soc. S. Austr. p. 177.

Chariscapterus, n. subg., p. 1111, for *O. opulens*, n. sp., W. Australia, p. 1112, and including *Carenium cupreomarginatum*, Blkn., and perhaps others ; SLOANE, P. Linn. Soc. N.S.W. (2) iii.

Calliscapterus viridiæneus, p. 461, *foveolatus*, p. 462, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Platythorax interioris, Australia, SLOANE, P. Linn. Soc. N.S.W. (2) iii, p. 1113, n. sp.

Carenium : peculiarities in the construction of the anterior tibia described and applied to the discrimination of species and of allied genera ; BLACKBURN, Tr. R. Soc. S. Austr. x, pp. 53-57. *C. anthracinum*, Maccl., variation described ; *id. t. c.* pp. 57 & 58.

C. inconspicuum, p. 59, *fugitivum*, p. 61, *rugatum*, p. 62, *cupreo-marginatum*, p. 63, *macleayi*, p. 64, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x ; *C. obsoletum*, Dawson River, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 972 ; *C. arenarium*, p. 1114, *decorum*, p. 1115, *lævicolle*, p. 1116, Australia, SLOANE, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Paliscaphus, n. subg., p. 1117, for *P. felix*, n. sp., Australia, p. 1118 ; SLOANE, P. Linn. Soc. N.S.W. (2) iii.

Carenoscaphus viridissimus, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 460, n. sp.

Conopterum modestum, Nicol Bay, SLOANE, p. 1119, P. Linn. Soc. N.S.W. (2) iii, n. sp.

Neoscaphus, n. g., for *N. simplex*, n. sp., Australia ; SLOANE, p. 1120, P. Linn. Soc. N.S.W. (2) iii.

Philoscaphus barnardi, Dawson River, MACLEAY, P. Linn. Soc. N.S.W. (2) ii, p. 973 ; *P. tepperi*, p. 36, *crassus*, p. 37, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x : n. spp.

Eutoma adelaidæ, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 52, n. sp.

Scarites arenarius, Bon., var. *opacus*, COSTA, Atti Acc. Nap. (2) ii, No. 8, p. 25.

Dyschirius lederi, Circassia, REITTER, Wien. ent. Z. vii, p. 85, n. sp.

Eudema nobile, p. 462, *parvulum*, p. 463, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Panagæus robustus, Mor., = (*davidis*, Fairm.) ; FAIRMAIRE, Rev. d'Ent. vii, p. 112.

Chlænus spoliatus, var. noticed ; FAIRMAIRE, Rev. d'Ent. vii, p. 113. *C. inderiensis*, Motsch., distinguished from *spoliatus*, Ros., pp. 214-217 ; SÉMENOW, Hor. Ent. Ross. xxii.

C. koenigi, Transcaspian, p. 219, SÉMENOW, Hor. Ent. Ross. xxii ; *C. lederi*, Araxes Valley, REITTER, Deutsche e. Z. xxxii, p. 417 ; *C. camilleæ*, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 108 ; *C. hemichlorus*, Yunnan, FAIRMAIRE, p. 8, Ann. Ent. Belg. xxxii : n. spp.

Callistus modestus, Schaum, redescribed ; FAIRMAIRE, p. 336, Ann. Soc. Ent. Fr. (6) viii.

Oodes froggatti, p. 463, *steroensis*, *pygmaeus*, *lilliputianus*, p. 464, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Dicelus dilatatus, habits of ; LUEBECK, P. E. Soc. Wash. i, p. 64.

Licinus punctatulus, Fab., = (*brevicollis*, Dej.) ; BEDEL, p. 285, Ann. Soc. Ent. Fr. (6) viii.

L. planicollis, France, FAUVEL, Rev. d'Ent. vii, p. 221, n. sp.

Brosicus davidianus, Yunnan, FAIRMAIRE, p. 7, Ann. Ent. Belg. xxxii, n. sp.

Pseudobrosicus, n. g., for *P. leucocnemis*, n. sp., Turkestan, SÁMÉNOW, Wien. ent. Z. vii, p. 248.

Cassellius nitidus, Waterh., pl. i, fig. 2, *hyadesi*, Fairm., fig. 3, figured, described, pp. 14 & 15 ; FAIRMAIRE, Miss. Sci. Cap. Horn, vi.

Darodilia castelnavi, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 465, n. sp.

Glyptus sculptilis, Br., larva described ; HORN, Tr. Am. Ent. Soc. xv, p. 19.

Harpalides and *Anisodactylides*, note relative to the Australian genera of ; BLACKBURN, Tr. R. Soc. S. Austr. x, pp. 180-182.

Hypharpax, note on the Australian species, characters of *H. inornatus*. Germ. ; BLACKBURN, Tr. R. Soc. S. Austr. x, pp. 182 & 183.

H. (sub Harpalus) inornatus, Germ., = (*parvus*, Chaud.) ; BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 808.

H. varus, *opacipennis*, King's Sound, MACLEAY, p. 471, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Phorticosomus mucronatus, *brunneus*, p. 178, *similis*, p. 179, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Orthogonus modestus, S. Africa, PÉRINGUEY, p. 81, Tr. S. African Phil. Soc. iv, n. sp.

Diaphoromerus politus, p. 465, *sevpunctatus*, p. 466, *multipunctatus*, *sulcatulus*, p. 467, *laticollis*, *froggatti*, p. 468, *porcatulus*, *opacus*, p. 469, *nigrans*, *sericipennis*, p. 470, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Haplaner marginatus, *recticollis*, p. 472, *puncticollis*, *subsericeus*, *assimilis*, p. 473, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Thenarotes australis, *discoidalis*, p. 184, *metallicus*, p. 185, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Notophilus, n. g., p. 185 (near *Thenarotes*), for *N. niger*, *gracilis*, p. 186, *parvus*, *latus*, p. 187, *palustris*, p. 188, n. spp., Australia ; BLACKBURN, Tr. R. Soc. S. Austr. x.

Lecanomerus flavocinctus, p. 188, *obscurus*, *lindi*, p. 189, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Harpalus caliginosus, Fab., stridulation of ; HAMILTON, Canad. Ent. xx, p. 62 ; SCHWARZ, P. E. Soc. Wash. i, pp. 51 & 77 : muscle-fibres of head ; GROVE (347). *H. perezii*, Vuill., n. var. *salinator* ; PANTEL, An. Soc. Esp. xvii, p. 224. *H. deyrollei*, Cast., note on ; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 190.

H. smyrnensis, Asia Minor, HEYDEN, Deutsche e. Z. xxxii, p. 69 ;

H. (Erpeinus) ibericus, Uclés, p. 219, *æsculanus*, p. 223, PANTEL, An. Soc. Esp. xvii : n. spp.

Ophonus cephalotes, Fairm., referred to *Scybalicus*; HEYDEN, Wien. ent. Z. vii, p. 215. *O. cunii*, Fairm., full description; PANTEL, An. Soc. Esp. xvii, p. 215.

Harpalodema, n. g., p. 418, for *H. lutescens*, *fausti*, n. spp., Astrachan, p. 419; REITTER, Deutsche e. Z. xxxii.

Acorius ghilianii n. var. *salinarius*; PANTEL, An. Soc. Esp. xvii, p. 235.

Gnathaphanus darwini, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 808, n. sp.

Acupalpus ornatus, *quadrimaculatus*, p. 474, *bimaculatus*, p. 475, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Stenolophus suturalis, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 470, n. sp.

Abacetus flavipes, *quadratipennis*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 480, n. spp.

Drimostoma explanatum, *euglyptum*, W. Africa, BATES, Ent. M. M. xxiv, p. 200, n. spp.

Eucamptognathus fulgido-cinctus, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 71, fig. 2, n. sp.

Simodontus occidentalis, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 479, n. sp.

Omaeus acutidens, Pekin, FAIRMAIRE, p. cc, Bull. Soc. Ent. Fr. (6) viii; *O. stictopleurus*, Yunnan, FAIRMAIRE, p. 10, Ann. Ent. Belg. xxxii; *O. froggatti*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 477 : n. spp.

Pterostichus strenuus n. var. *lectulus*; REITTER, Wien. ent. Z. vii, p. 87.

P. etelkæ, Transylvania, ORMAY, Wien. ent. Z. vii, p. 165; *P. przewalskyi*, Tibet, p. 362, *validipes*, p. 364, TSCHITSCHERINE, Hor. Ent. Roes. xxii; *P. hæsitatus*, Yunnan, FAIRMAIRE, p. 11, Ann. Ent. Belg. xxxii; *P. crenulatus*, p. 478, *lævigatus*, p. 479, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Abax tantillus, Yunnan, FAIRMAIRE, p. 12, Ann. Ent. Belg. xxxii, n. sp.

Stobeus, n. g., near *Pterostichus*, for *S. collucens*, n. sp., Yunnan; FAIRMAIRE, p. 8, Ann. Ent. Belg. xxxii.

Aurisma, n. g., near *Platysma*, for *A. delavayi*, n. sp., Yunnan; FAIRMAIRE, p. 9, Ann. Ent. Belg. xxxii.

Steropus malidus, larva attacking earthworm; HUGHES, P. Cambr. Phil. Soc. vi, p. 245.

S. licinoides, p. 10, *scuticollis*, p. 11, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxii, n. spp.

Steropanus, n. g., near *Steropus*, for *S. forticornis*, n. sp., Yunnan; FAIRMAIRE, p. 10, Ann. Ent. Belg. xxxii.

Pæcilus chlænoides, *sulcatulus*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Pedius ineptus and *siculus*, synonymical note; BEDEL, p. 285, Ann. Soc. Ent. Fr. (6) viii. *P. siculus*, Lev., note on its characters and systematic position; BELON, Rev. d'Ent. vii, pp. 71-74.

Rhytisternus sulcatipes, Australia, BLACKBURN, P. Linn. Soc. N.S.W.

(2) iii, p. 809; *R. angustulus*, p. 477, *limbatus*, p. 478, MACLEAY, P. Linn. Soc. N.S.W. (2) iii: n. spp.

Pseudohaptoderus, n. subg., for *P. semenovi*, n. sp., Tibet; Tschitscherine, p. 366, Hor. Ent. Ross. xxii.

Cratogaster sulcata, Blanch., = (*melas*, Cast.); BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 809.

C. occidentalis, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 475, n. sp.

Zabrus gibbus, ravages; ORMEROD, Rep. xii, p. 43-48.

Amara: table of the characters of the Netherlands species; EVERTS (17). *A. aulica* n. var. *circassica*; REITTER, p. 86, Wien. ent. Z. vii.

A. lantescana, France, FAUVEL, Rev. d'Ent. vii, p. 222; *A. (Oelia) sollicita*, Spain, PANTEL, An. Soc. Esp. xvii, p. 236: n. spp.

Pristonychus chevrieri, Pekin, FAIRMAIRE, p. clv, Bull. Soc. Ent. Fr. (6) viii; *A. australis*, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 811: n. spp.

Pristodactyla caucasica n. var. *femorale*; REITTER, Wien. ent. Z. vii, p. 88.

Thermoscelis insignis n. var. *kamberskyi*; REITTER, Wien. ent. Z. vii, p. 89.

Calathus gregarius, Say, destroys the eggs of *Doryphora 10-lineata*; WEBSTER, in Riley Rep. 1887, p. 151. *C. micropterus, mollis*, &c., distinguished by ♂ structures; SCHILSKY, Deutsche e. Z. xxxii, p. 125.

C. punctibasis, Pekin, FAIRMAIRE, Bull. Soc. Ent. Fr. (6) viii, p. cc; *C. strigipennis*, p. 12, *nubilipennis*, p. 13, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxii: n. spp.

Agonum birthleri, Asia Minor, HOFFFGARTEN, p. 177, Ent. Nachr. xiv; *A. dorsostriatum*, Yunnan, FAIRMAIRE, p. 13, Ann. Ent. Belg. xxxii: n. spp.

Platynus corsicus, Tourn., note on; HEYDEN, Wien. ent. Z. vii, p. 216.

Olisthopus anomalus, Perris, referred to *Badister*; HEYDEN, Wien. ent. Z. vii, p. 215.

Dyscolus ovipennis, Yunnan, FAIRMAIRE, p. 14, Ann. Ent. Belg. xxxii, n. sp.

Patrobis microphthalmus, Yunnan, FAIRMAIRE, p. 14, Ann. Ent. Belg. xxxii, n. sp.

Colpodes superlita, Kiu-Kiang, BATES, P. Z. S. 1888, p. 383, n. sp.

Omphreus morio n. var. *beckianus*; Soc. Ent. iii, p. 89.

Pogonus castaneipes, Pekin, FAIRMAIRE, p. cc, Bull. Soc. Ent. Fr. (6) viii; *P. approximans*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 112: n. spp.

Homaloderu dorsigera, figured and redescribed; FAIRMAIRE, Miss. Sci. Cap Horn, vi, p. 18, pl. i, fig. 4.

Trechus cantalicus, France, FAUVEL, Rev. d'Ent. vii, p. 221; *T. ithæ, fischensis*, p. 83, *alpigradus*, p. 84, Circassia, REITTER, Wien. ent. Z. vii: n. spp.

Anophthalmus circassicus, Circassia, REITTER, Wien. ent. Z. vii, p. 84, n. sp.

Anillus explanatus, California, HORN, Tr. Am. Ent. Soc. xv, p. 26, n. sp.

Pseudolinneum, n. g., p. 366, for *P. eichoffi*, n. sp., Germany, p. 365 ; KRAATZ, Deutsche o. Z. xxxii.

Bembidium fasciatum and allies, Fauvel's remarks on their synonymy queried ; SCHILSKY, Deutsche o. Z. xxxii. *B. biguttatum* and allies discussed at length ; BORRE, C.R. ent. Belg. xxxii, pp. lxxxiii-lxxxviii.

B. proprium, *dubium*, p. 43, *errans*, *ocellatum*, p. 44, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x ; *B. (Synchostictus) lederi*, Circassia, REITTER, Wien. ent. Z. vii, p. 82 ; *B. (Eudromus) rufotibiellum*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 112 : n. spp.

New genus in amber ; see PALMÖ-entomology.

Tachys unilineatus, n. n. for *T. unistriatus*, Reitt., nec Putz. ; REITTER, Wien. ent. Z. vii, p. 104. *T. scutellaris* var. *atrata* ; COSTA, Atti Acc. Nap. (2) i, No. 2, p. 85.

T. infuscatus, p. 38, *similis*, *lindi*, p. 39, *adeluidæ*, *uniformis*, p. 40, *semi-striatus*, *flindersi*, p. 41, *captus*, p. 42, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

HALIPLIDÆ and DYTISCIDÆ.

[Cf. BLACKBURN (76, 78), COSTA (164), RÉGIMBART (718, 719).]

Dejean's collection of *Dytiscides* and *Gyrinides* acquired by OBERTHUR ; Bull. Soc. Ent. Fr. (6) viii, p. clix.

Haliplus obconicus, Venezuela, RÉGIMBART, Ann. Soc. Ent. Fr. (6) viii, p. 381, n. sp.

Canthydrus festinus, Burma, RÉGIMBART, p. 610, Ann. Mus. Genov. (2) vi ; *C. simoni*, Venezuela, *id.* p. 383, Ann. Soc. Ent. Fr. (6) viii ; *C. grammopterus*, Brazil, *id. t. c.* p. 390 : n. spp.

Hydrocanthus waterhousei, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 65, n. sp.

Laccophilus pellucidus, p. 610, *rufulus*, p. 611, Burma, RÉGIMBART, Ann. Mus. Genov. (2) vi ; *L. succineus*, *venezuelensis*, p. 382, *amœnus*, p. 383, S. America, *id.* Ann. Soc. Ent. Fr. (6) viii ; *L. oberthuri*, *plagiatus*, p. 388, *intermedius*, Amazona, *brasiliensis*, Brazil, p. 389, *id. t. c.* : n. spp.

Hydrovatus ferrugatus, Reg., = (*elevatus*, Shp.) ; RÉGIMBART, Ann. Mus. Genov. (2) vi, p. 612.

H. laccophiloides, Burma, RÉGIMBART, *l. c.*, n. sp.

Bidessus gestroi, Rangoon, RÉGIMBART, p. 613, Ann. Mus. Genov. (2) vi ; *B. alternatus*, Venezuela, *id.* Ann. Soc. Ent. Fr. (6) viii ; *B. surinamensis*, Guiana, *id. t. c.* p. 390 : n. spp.

Hydroporus bimaculatus, Duf., = (*jucundus*, Perris, = *dorsoplagiatus*, Fairm.) ; BEDEL, p. 285, Ann. Soc. Ent. Fr. (6) viii. *H. numidicus*, n. n. for *H. dorsoplagiatus*, Seidl., nec Fairm. ; *id. t. c.* p. 286.

Hydroporus fulviventris, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 85, n. sp.

Hypoporus elegans, Bhamo ; RÉGIMBART, p. 615, Ann. Mus. Genov. (2) vi, n. sp.

Hyphytrus birmanicus, Bhamo, RÉGIMBART, p. 614, Ann. Mus. Genov. (2) vi, n. sp.

Platynectes princeps, Burma, RÉGIMBART, p. 616, Ann. Mus. Genov. (2) vi, n. sp.

Copelatus fecæ, Burma, RÉGIMBART, p. 616, Ann. Mus. Genov. (2) vi ; *C. simoni*, p. 385, *luridescens*, p. 386, Venezuela, *id.* Ann. Soc. Ent. Fr. (6) viii ; *C. amazonicus*, p. 391, *formosus*, p. 392, Amazons, *id. t. c. : n. spp.*

Dytiscus : notes on some species ; RÜHL, Soc. Ent. ii, p. 170 ; structure of leg as an organ of aquatic locomotion ; AMANS (4). *D. marginalis*, formation of egg ; LEYDIG (512).

Acilius, development of eyes of larva ; PATTEN (662).

Hydaticus incertus, Bharno, RÉGIMBART, p. 617, Ann. Mus. Genov. (2) vi, n. sp.

Graphoderes bilineatus, *cinereus*, *zonatus*, characters of, discussed ; EVERTS, Tijdschr. Ent. xxxi, pp. lxxxiii & lxxxiv. *G. fasciatocollis* and *cinereus*, variation of ; HAMILTON, Canad. Ent. xx, p. 62.

Cybister granulatus, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 812, n. sp.

GYRINIDÆ.

[Cf. RÉGIMBART (718, 719), QUEDENFELDT (694), STIERLIN (872).]

Dineutes kaiseri, Sinai, STIERLIN, p. 48, MT. schw. ent. Ges. viii ; *D. kolaensis*, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 159 : n. spp.

Orectochilus corpulentus, ♂ described ; RÉGIMBART, p. 619, Ann. Mus. Genov. (2) vi.

O. cardiophorus, p. 620, *cordatus*, *fecæ*, p. 621, *trianguliger*, p. 622, Burma, RÉGIMBART, Ann. Mus. Genov. (2) vi, n. spp.

Gyretes sallei, Lab., note on ; RÉGIMBART, p. 387, Ann. Soc. Ent. Fr. (6) viii.

HYDROPHILIDÆ.

[Cf. BERGROTH (57), BLACKBURN (78), FAIRMAIRE (243), KUWERT (483, 484, 485, 486, 487), REITTER (727).]

Hydrophilus piceus, embryology ; GRABER (325) : structure of labrum of ; LABONNE, Mem. Soc. Z. Fr. i, p. 229, pl. vii, figs. 3 & 4 : histology of muscles of legs and wings of ; RAMON (709). *H. oratus*, structure of ♂ palpi ; SCHWARZ, P. E. Soc. Wash. i, pp. 51 & 54.

Sternolophus tenebricosus, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 813, n. sp.

Hydrobius macer, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 819, n. sp.

Hydrobianomorpha, n. g., p. 814, for *H. bovilli*, p. 816, *tepperi*, p. 817, n. spp., Australia ; BLACKBURN, P. Linn. Soc. N.S.W. (2) iii.

Paracymorphus globuloides, Sicily, KUWERT, Nat. Scil. viii, p. 39, n. sp.

Paracymus schneideri, Caucasus, KUWERT, Deutsche e. Z. xxxii, p. 293, n. sp.

Paranacarna, n. subg. of *Paracymus*, p. 820, for *P. lindl. sublineatus*, n. spp., Australia, p. 821 ; BLACKBURN, P. Linn. Soc. N.S.W. (2) iii.

Methydrus, n. subg. of *Philydrus* ; REY, Ann. Soc. L. Lyon. xxxi, p. 253.

Agraphilydrus, n. subg. of *Philydrus*, p. 280, with *A. latus*, *nitiduloides*, n. spp., Alexandria, p. 291; KUWERT, Deutsche e. Z. xxxii.

Philydrus: the species of Europe and Mediterranean region tabulated; KUWERT, Deutsche e. Z. xxxii, pp. 273-281. *P. berolinensis*, n. n. for *grisescens*, Kust.; *id.* p. 278. *P. fimbriatus*, Melah., var. noticed; HAMILTON, p. 63, Canad. Ent. xx.

P. ragusa, Sicily, KUWERT, Nat. Sicil. viii, p. 38; *P. hispanicus*, Spain, p. 281, *caspicus*, Asia Minor, p. 282, *vultur*, Russia mer., p. 283, *segmentinotatus*, S.E. Europe, *maculipex*, Egypt, p. 284, *apicinotus*, Bagdad, p. 285, *sahlbergi*, N. Russia, *atricornis*, Spain, p. 286, *unguidebilis*, Sarepta, p. 287, *sternospina*, Central Europe, p. 288, *lederi*, Lenkorau, *ater*, Egypt, p. 289, *nitidulus*, Syria, p. 290, KUWERT, Deutsche e. Z. xxxii; *P. lærigatus*, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 823: n. spp.

Helochares mentinotus, Egypt, KUWERT, Deutsche e. Z. xxxii, p. 292, n. sp.

Helobata, n. n. for *Helopeltis*, Horn, *nec* Sign.; BERGROTH, Deutsche e. Z. xxxii, p. 221.

Volvulus punctatus, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 839, n. sp.

Berosus: the European species tabulated; KUWERT, Deutsche e. Z. xxxii, pp. 130-139: n. var. *lineicollis*; COSTA, Atti Acc. Nap. (2) i, No. 9, p. 49.

B. acutispina, Tonkin, Fairmaire, p. 336, Ann. Soc. Ent. Fr. (6) viii; *B. majusculus*, p. 824, *gravis*, p. 826, *decipiens*, p. 827, *duplopunctatus*, p. 828, *discolor*, p. 829, *flindersi*, p. 831, *simulans*, p. 832, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii: n. spp.

Acanthoberosus, n. subg. of *Berosus*, p. 130, with *A. ægyptiacus*, p. 139, *numidicus*, p. 140, Africa, *asiaticus*, Bagdad, p. 141, *lenkoranus*, Persia, *samarkanti*, Turkestan, p. 142, *frontifoveatus*, Sarepta, *schusteri*, Hungary, p. 143, *æthiops*, Egypt, p. 144, n. spp.; KUWERT, Deutsche e. Z. xxxii.

Laccobius leucaspis, Kies., = (*elongatus*, Tourn.); KRAATZ, Deutsche e. Z. xxxii, p. 176.

Embololimnebius baudii, *angusticonus*, p. 234, *laticonus*, p. 235, Sicily, KUWERT, Nat. Sicil. vii, n. spp.

Bolimnius, n. subg. of *Limnebius*; REY, Ann. Soc. L. Lyon, xxxi, p. 318.

Hydrobaticus australis, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 823, n. sp.

Hygrotophus nutans, Macl., note on; BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 824.

Hydrochus latitans, Tonkin, FAIRMAIRE, p. 337, Ann. Soc. Ent. Fr. (6) viii; *H. adelaidæ*, p. 832, *regularis*, p. 833, *victoriæ*, p. 834, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii: n. spp.

Octhebius velutinus, Fairm., = (*trisulcatus*, Rey); BEDEL, p. 286, Ann. Soc. Ent. Fr. (6) viii.

O. australis, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 835, n. sp.

Cobalius, p. 24, *Bothochius*, p. 53, n. subgg. of *Octhebius*; REY, Ann. Soc. L. Lyon, xxxii.

Kyphohelophorus, *Trichohelophorus*, p. 223, *Megahelophorus*, p. 226,

Atractohelophorus, p. 227, n. subgg. of *Helophorus*; KUWERT, Wien. ent. Z. v.

Fahrea, n. g. for *Helophorus sculpturatus*, Boh.; BERGROTH, Deutsche e. Z. xxxii, p. 221.

Taenhydræna, *Phothydræna*, p. 114, *Hoplydræna*, *Holcohhydræna*, p. 115, *Sphaenhydræna*, p. 118, *Grammhydræna*, p. 119, n. subgg. of *Hydræna*; KUWERT, Deutsche e. Z. xxxii.

Hydræna: the European species tabulated, with synonymy; KUWERT, Deutsche e. Z. xxxii, pp. 112-120.

H. dentipalpis, Circassia, REITTER, Wien. ent. Z. vii, p. 143; *H. kiesenwetteri*, Italy, p. 120, *croatica*, Croatia, p. 121, *africana*, N. Africa, p. 122, KUWERT, Deutsche e. Z. xxxii; *H. torrensi*, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 836: n. spp.

Grammhydræna stussineri, Bilboa, KUWERT, Deutsche e. Z. xxxii, p. 123, n. sp.

Haenhydræna, p. 95, *Hadrenya*, p. 96, n. subgg. of *Hydræna*; REY, Ann. Soc. L. Lyon, xxxii.

Sphaenhydræna caucasica, Caucasus, KUWERT, Deutsche e. Z. xxxii, p. 121, n. sp.

Oyclonotum australe, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 839, n. sp.

Cercyon agnotum, Sicily, KUWERT, Nat. Sicil. viii, p. 38; *C. fossum*, S. Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 840: n. spp.

Ercyon, n. subg. of *Cercyon*; REY, Ann. Soc. L. Lyon, xxxii, p. 129.

Cercyon, n. subg. of *Cercyon*; REY, Ann. Soc. L. Lyon, xxxii, p. 156.

Cheilocercyon, n. subg. of *Cercyon*; SEIDLITZ, Fauna baltica, ed. 2, p. 113, Arten.

Paracercyon, n. g., for part of *Cercyon*; SEIDLITZ, Fauna baltica, ed. 2, p. 23, Gattungen.

PLATYPSYLLIDÆ.

Platypsylla castoris, larva described, pp. 23-26, figured, pl. iii, figs. 17-22; HORN, Tr. Am. Ent. Soc. xv.

STAPHYLINIDÆ.

[Cf. BLACKBURN (73, 74, 75, 76, 77), COSTA (164), EPPELSHEIM (232, 233, 234, 631), FAUVEL (264), FOWLER (282), GESTRO (307), QUEDENFELDT (694), REITTER (724, 727), REY (746), SCHAUFEUSS (795, 796), SHARP (836), WASMANN (912).]

New genus in amber; see Palæo-entomology.

Aleocharides.

Aleochara brevicornis, Taschkent, EPPELSHEIM, Deutsche e. Z. xxxii, p. 50; *A. niponensis*, p. 281, *squalithorax*, p. 282. Japan, SHARP, Ann. N. H. (6) ii; *A. pelagi*, p. 45, *lata*, *occidentalis*, p. 46, *insignis*, p. 47, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x: n. spp.

Microglossa (*Crataeva*) *solskyi*, Taschkent, EPPELSHEIM, Deutsche e. Z. xxxii, p. 49, n. sp.

Homœusa kerigata, longicornis, Japan, SHARP, p. 283, Ann. N. H. (6) ii, n. spp.

Aspidobactrus, n. g., p. 283, for *A. claviger*, n. sp., Japan, p. 284; SHARP, Ann. N. H. (6) ii.

Thiusophila oxyrodina, Japan, SHARP, p. 284, Ann. N. H. (6) ii, n. sp.

Oralea ruficollis, Greece, EPPELSHEIM, Deutsche e. Z. xxxii, p. 403, n. sp.

Phleodroma tricolor, Central Asia, EPPELSHEIM, Deutsche e. Z. xxxii, p. 56, n. sp.

Orypoda (Derocala) ulyxis, Zante, EPPELSHEIM, Deutsche e. Z. xxxii, p. 407; *O. luridipennis, subrufa, hilaris*, Japan, SHARP, p. 285, Ann. N. H. (6) ii : n. spp.

Euthorax ruficornis, Sol., = (*Campoporus elegantulus*, Arrib.); FAUVEL, Rev. d'Ent. vii, p. 24.

Oligonotus, Arrib., to be placed near *Euthorax*; FAUVEL, Rev. d'Ent. vii, p. 24.

Calodera deademonia, Japan, SHARP, p. 286, Ann. N. H. (6) ii, n. sp.

Porocallus, n. g., p. 286, for *P. insignis*, n. sp., Japan, p. 287; SHARP, Ann. N. H. (6) ii.

Saphocallus, n. g., p. 287, for *S. parviceps*, n. sp., Japan, p. 268; SHARP, Ann. N. H. (6) ii.

Atemeles and *Lomechusa*: WASMANN gives an elaborate account of the habits of these ants' nest beetles (912).

Atemeles paradoxus and *emarginatus*, varieties noticed and their prothoraces figured; WASMANN, (912) pp. 273-275: *emarginatus*, larva described; *id. t. c.* pp. 324-327.

Atemeles sinuata, Japan, SHARP, p. 288, Ann. N. H. (6) ii, n. sp.

Myrmecopora (Ilysa) turanica, Turcomania, EPPELSHEIM, Deutsche e. Z. xxxii, p. 52, n. sp.

Myrmedonia termiticola, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 110; *M. optata, fugax*, p. 289, *particornis*, p. 290, *indiscreta, spreta*, p. 291, Japan, SHARP, Ann. N. H. (6) ii, n. spp.

Astilbus akinini, Taschkent, EPPELSHEIM, Deutsche e. Z. xxxii, p. 51, n. sp.

Thamiaræa diffinis, Japan, SHARP, p. 292, Ann. N. H. (6) ii, n. sp.

Homalota (Anopleta) congenita, p. 53, *H. (Meotica) dissoluta*, p. 54, *præcox*, p. 56, Central Asia, EPPELSHEIM, Deutsche e. Z. xxxii; *H. (Aloconota) subænescens*, Mediterranean region, p. 404, *H. (Geotiba) oertzeni*, Greece, p. 405, *id. t. c.*; *H. niponensis*, p. 292, *lutulenta*, *oligotinula*, p. 293, *gyrophænula*, p. 294, Japan, SHARP, Ann. N. H. (6) ii : n. spp.

Thectura armata, Japan, SHARP, p. 294, Ann. N. H. (6) ii, n. sp.

Falagria myrmecophila, Japan, SHARP, p. 294, Ann. N. H. (6) ii, n. sp.

Ectolabrus, n. g., for *E. laticollis*, n. sp., Japan, SHARP, p. 370, Ann. N. H. (6) ii.

Autalia rufula, Japan, SHARP, p. 371, Ann. N. H. (6) ii, n. sp.

Bolitochara varipes, Japan, SHARP, p. 371, Ann. N. H. (6) ii, n. sp.

Leptusa piceata, Muls., = (*abdominalis*, Motsch.); KRAATZ, Deutsche 1888. [VOL. XXV.]

e. Z. xxxii, p. 333. *L. angusta*, Aubé, n. varr., *proxima*, *planiuscula*; REITTER, p. 145, Wien. ent. Z. vii.

L. oertzeni, p. 401, *asperata*, p. 402, Greece, EPPELSHEIM, Deutsche e. Z. xxxii; *L. impressicollis*, Japan, SHARP, p. 371, Ann. N. H. (6) ii: n. spp.

Tachysidea velox, Japan, SHARP, p. 372, Ann. N. H. (6) ii, n. sp.

Silusa areolata, p. 144, *uniplicata*, p. 145, Circassia, REITTER, Wien. ent. Z. vii; *S. rugosa*, p. 372, *rorida*, *punctipennis*, p. 373, *conferta*, *crassicornis*, p. 374, *lanuginosa*, p. 375, Japan, SHARP, Ann. N. H. (6) ii: n. spp.

Epipeda græca, Morea, EPPELSHEIM, Deutsche e. Z. xxxii, p. 406; *E. granigera*, p. 375, *fraterna*, p. 376, Japan, SHARP, Ann. N. H. (6) ii: n. spp.

Gyrophæna sapporensis, Japan, SHARP, p. 376, Ann. N. H. (6) ii, n. sp.

Myllæna lynchi, n. n. for *parvicollis*, Arrib., nec Kr.; FAUVEL, Rev. d'Ent. vii, p. 24.

M. japonica, Nagasaki, SHARP, p. 377, Ann. N. H. (6) ii, n. sp.

Protinodes, n. g. (*Oligotina*), p. 377, for *P. puncticollis*, n. sp., Japan; SHARP, Ann. N. H. (6) ii.

Tachyporides.

Conosoma fimbriatum, *tibiale*, p. 454, *varicorne*, *armatum*, p. 455, Japan, SHARP, Ann. N. H. (6) ii; *Conurus instabilis*, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 3: n. spp.

Tachyporus pallidus, England, FOWLER, Col. Brit. ii, p. 195; *T. terminalis*, p. 451, *suavis*, *oculatus*, p. 452, *orthogrammus*, p. 453, Japan, SHARP, Ann. N. H. (6) ii: n. spp.

Tachinus japonicus, p. 379, *trifidus*, *bidens*, p. 380, *luridus*, p. 381, *nigrinus*, p. 382, *sibiricus*, p. 383, *nigriceps*, *impunctatus*, p. 384, *diminutus*, *punctiventris*, p. 385, Japan, SHARP, Ann. N. H. (6) ii, n. spp.

Bolitobius principalis, *daimio*, p. 456, *semirufus*, p. 457, *cinctiventris*, *breviceps*, p. 458, *pallidiceps*, *simplex*, *felix*, p. 459, Japan, SHARP, Ann. N. H. (6) ii, n. sp.

Mycetoporus monticola, Scotland, FOWLER, Col. Brit. ii, p. 216; *M. floralis*, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. 1887, p. 3; *M. convexus*, *discoïdalis*, p. 463, *duplicatus*, p. 464, Japan, SHARP, Ann. N. H. (6) ii: n. spp.

Megacronus formosus, Gr., n. var. *dimidiatus*; REITTER, p. 147, Wien. ent. Z. vii.

M. prolongatus, p. 460, *optatus*, *gracilis*, p. 462, Japan, SHARP, Ann. N. H. (6) ii, n. spp.

Staphylinides.

Acylophorus indignus, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 4, n. sp.

Heterothops taurus, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 4, n. sp.

Quedius (*Edipus*) *mutilatus*, p. 58, *Q.* (*Saurulus*) *coherens*, p. 61, Central Asia, EPPELSHEIM, Deutsche e. Z. xxxii; *Q. inconspicuus*, p. 5, *andersoni*, *tepperi*, p. 6, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x; *Q. ferax*, S. Australia, *id. t. c.* p. 66: n. spp.

Xanthopygus oliveiræ, Arrib., note on; FAUVEL, Rev. d'Ent. vii, p. 24.

Philonthus ebeninus, Grav., *concinus* and *dimidiatus*, characters of; GERHARDT, Z. Ent. Bresl. (2) xiii, pp. 7-9.

P. ornatus, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 47, n. sp.

Heaperus pulleinei, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 7, n. sp.

Caflus occidentalis, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 48, n. sp.

Orypus (*Goërius*) *angustulus*, Taschkent, EPPELSHEIM, Deutsche e. Z. xxxii, p. 61, n. sp.

Staphylinus cervinipennis, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 159, n. sp.

Leistotrophus, habits noticed; HACKER, Wien. ent. Z. vii, p. 49.

Leptacinus picticornis, *filum*, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 7, n. sp.

L. picticornis, *suprà*, = (*Xantholinus socius*, Fauv.), but belongs to *Leptacinus*; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 190.

Pæderides.

Cryptobium delicatulum, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 9; *C. varicorne*, p. 68, *adeluidæ*, *delicatulum*, p. 69, *elegans*, p. 70, Australia, *id. t. c.* : n. spp.

Scimbalium minimum, Macedonia, EPPELSHEIM, Deutsche e. Z. xxxii, p. 408; *S. agreste*, p. 8, *letum*, p. 9, S. Australia, BLACKBURN, *t. c.* : n. spp.

Lathrobium: the "forcipes" of the European species described and figured, and the species tabulated thereon; CZWALINA, Deutsche e. Z. xxxii, pp. 337-354.

Tetartopeus, n. subg. of *Lathrobium*, for *L. terminatum* group; CZWALINA, p. 349, Deutsche e. Z. xxxii.

Lathrobium (*Glyptomerus*) *cavicola* and *apenninum*, Baudi, p. 355, *L. quadratum*, *terminatum*, *nigrum*, and *punctulatum*, p. 351, notes on, with distinctive characters; CZWALINA, Deutsche e. Z. xxxii.

L. hamatum, Caucasus, p. 343, *ripicolu* (Kies. i. l.), Europe, p. 344, *furcatum* (Fauv. i. l.), S.E. Europe, p. 346, *eppelsheimii*, without locality, pp. 341 & 348, *L. (Tetartopeus) decipiens*, Smyrna, p. 353, CZWALINA, Deutsche e. Z. xxxii; *L. (Lobathrium) ludyi*, Germany, EPPELSHEIM, Deutsche e. Z. xxxii, p. 175; *L. (Glyptomerus) bosnicum*, Bosnia, REITTER, Deutsche e. Z. xxxii, p. 420; *L. adeluidæ*, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 8; *L. exiguum*, Australia, *id. t. c.* p. 66 : n. spp.

Scopæus microphthalmus, Mediterranean Region, EPPELSHEIM, Deutsche e. Z. xxxii, p. 409; *S. lutebricola*, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 71 : n. spp.

Lithocharis lindi, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 48, n. sp.

Sciocharis (sub *Lithocharis*) *exilis*, Er., = (*atrutula*, Arrib., and ? *fragilis*, Shp.); FAUVEL, Rev. d'Ent. vii, p. 25.

Medon debilicornis, Woll., = (*Chloëcharis rufula*, Arrib.); FAUVEL, Rev. d'Ent. vii, p. 25.

Sunius fauveli, Taschkent, EPELSHEIM, Deutsche e. Z. xxxii, p. 63; *S. aequalis*, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 9 : n. spp.

Nazera pallidipes, Circassia, REITTER, Wien. ent. Z. vii, p. 149, n. sp.

Paderus adelaidæ, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 10, n. sp.

Pinophilides and *Stenides*.

Pinophilus erythrostomus, redescribed; COSTA, Atti Acc. Nap. (2) i, No. 2, p. 86.

P. latebricola, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 10, n. sp.

Edichirus quedenfeldti, Marocco, SCHAUFFUSS, p. 314, Ent. Nachr. xiv; *E. andersoni*, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 10 : n. spp.

Stenus longipennis, Turcomania, EPELSHEIM, Deutsche e. Z. xxxii, p. 64, n. sp.

Oxytelides, *Omalides*, and *Phlæocharides*.

Bledius akinini, Central Asia, EPELSHEIM, Deutsche e. Z. xxxii, p. 65; *B. adelaidæ*, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 49; *B. caroli*, p. 13, *minax*, *injucundus*, p. 14, S. Australia, *id. l. c.* : n. spp.

Oxytelus affinis, *fairmairei*, habits of; GERHARDT, Z. Ent. Bresl. (2) xiii, pp. 10-13.

Trogophloeus paludicola, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 49, n. sp.

Homalium balassogloi, Central Asia, EPELSHEIM, Deutsche e. Z. xxxii, p. 66; *H. adelaidæ*, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 191 : n. spp.

Anthophagus abbreviatus n. var. *fascifer*; REITTER, p. 150, Wien. ent. Z. vii.

Hypomygna subrugata, Hyères, REY, p. cxix, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Phlæocharis antipodum, Fauv., note on; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 191.

PSELAPHIDÆ.

[Cf. BRENDL (102, 103), GUILLEBEAU (349), MARSELL (553), PÉRIN-GEY (667), REITTER (725, 727, 733), SCHAUFFUSS (794).]

Catalogue of the described species, with new names for such as have been used a second time; SCHAUFFUSS (794).

Synopsis of genera of N. American *Pselaphida*; BRENDL, Tr. St. Louis Ac. v, pp. 298-302.

Critical remarks on Schaufuss' descriptions of last year; REITTER (733).

Hamotus, the species tabulated; REITTER, Deutsche e. Z. xxxii, pp. 230-233.

H. inflatij alpis, p. 225, *angusticollis*, p. 226, *appendiculatus*, *brevicornis*, *rufus inus*, p. 227, *gracilipes*, p. 228, *impunctatus*, p. 229, Brazil, *fasciophilus*,

S. America, *centralis*, Guatemala, p. 229, REITTER, Deutsche e. Z. xxxii, n. spp.

Phamisulus, n. g., near *Hamotus*, p. 234, for *P. hetschkoi*, n. sp., Brazil, p. 235; REITTER, Deutsche e. Z. xxxii.

Neophamisus, n. g., for *Phamisus horroris*, Schauf.; REITTER, Deutsche e. Z. xxxii, p. 234.

Euphalepus, the species tabulated; REITTER, Deutsche e. Z. xxxii, p. 240.

E. fuscocapillus, p. 236, *hetschkoi*, *bilineatus*, *longicornis*, p. 237, *puncticollis*, *levicollis*, p. 238, *lothari*, *punctatissimus*, *levissimus*, p. 239, *longiceps*, p. 240, Blumenau, REITTER, Deutsche e. Z. xxxii: n. spp.

Phalepus marelloides, Blumenau, REITTER, Deutsche e. Z. xxxii, p. 242, n. sp.

Aplolea valdiviensis, Bl., = (*prases*, Schauf.); REITTER, Deutsche e. Z. xxxii, p. 259.

A. hirta, *pilifera*, Brazil, REITTER, Deutsche e. Z. xxxii, p. 243, n. spp.

Tychusournieri, p. 368, *tuberculatus*, p. 370, *jacquelinei*, *rufopictus*, p. 371, *colchicus*, p. 372, *niger*, p. 373, *ibericus*, *corsicus*, p. 374, *monilicornis*, p. 375, characters of; GUILLEBEAU, Rev. d'Ent. vii.

T. olbiensis, p. 369, *striola*, p. 374, France, GUILLEBEAU, Rev. d'Ent. vii, n. spp.

Bythinus xambeui, p. 203, *albeillei*, p. 204, France, GUILLEBEAU, Rev. d'Ent. vii; *B. tscherkessicus*, p. 284, *lederi*, p. 285, with var. *fluctuosus*, p. 286, *argiolus*, p. 286, Circassia, REITTER, Wien. ent. Z. vii: n. spp.

Pygoxyon bythiniforme, Circassia, REITTER, Wien. ent. Z. vii, p. 317, n. sp.

Butrisus, the Brazilian species tabulated; REITTER, Deutsche e. Z. xxxii, pp. 241-248.

B. (Syrbatus) divergens, p. 248, *nasutus*, *antennator*, *bythinocerus*, p. 249, *hetschkoi*, p. 250, *scitus*, *quadrioculatus*, p. 251, *marthæ*, *solivagus*, p. 252, *curvispina*, *atricapillus*, p. 253, *soror*, p. 254, *B. (Arthmius) primarius*, p. 254, *melanocephalus*, *platycerus*, p. 255, *sublaminatus*, *edithæ*, *bituberculatus*, p. 256, *hiatusus*, *minax*, p. 257, *patruelis*, *rostellatus*, *humilior*, *adulator*, *lubricus*, p. 258, *dichrous*, *manifestus*, p. 259, all from Blumenau, REITTER, Deutsche e. Z. xxxii, n. spp.

Xybaris, Reitt., = (*Cylindrembolus*, Schauf.); REITTER, Deutsche e. Z. xxxii, p. 259.

Bryusis rufa, Schm., *cordata*, Schauf., and allies, synonymy discussed; REITTER, B. E. Z. xxxii, p. 470. *B. levicollis*, Aubé, = (*Decarthron bipunctatum*, Reitt.); REITTER, Deutsche e. Z. xxxii, p. 259.

Verticinotus, n. g. (but published in 1887 as *Anchylarthron*), for *Decarthron*, part; BRENDÉL, Tr. St. Louis Acad. v, p. 300, and Deutsche e. Z. xxxii, p. 261.

E:plectus striz, Reitt., referred to *Octomicrus*; REITTER, Deutsche e. Z. xxxii, p. 259. *E. nitidus*, Fairm., *nanus*, Reich., *reclieri*, Saulcy, characters of discussed; GUILLEBEAU, Rev. d'Ent. vii, p. 220.

E. reyi (Saulcy MS.) p. 214, *sulciventris*, France, *corsicus*, Corsica, p. 215, *abeillei*, p. 216, *fairmairei*, *tholini*, p. 218, *faurei*, *laticeps*, p. 219, France,

Guillebeau, Rev. d'Ent. vii ; *E. puncticeps*, Circassia, REITTER, Wien. ent. Z. vii, p. 318 : n. spp.

Conoplectus, n. g., for *Euplectus canaliculatus*, Lec. ; BRENDL, Deutsche e. Z. xxxii, p. 263.

Bibloporus, characters noticed, p. 204, *bicolor*, Denny, redescribed, p. 205 ; GUILLEBEAU, Rev. d'Ent. vii.

B. pyrenæus, p. 206, *mayeti*, *abeillei*, p. 207, *chamboveti*, pp. 208 & 378, *reyi*, p. 209, France ; GUILLEBEAU, Rev. d'Ent. vii, n. spp.

Pseudoplectus, characters noticed ; GUILLEBEAU, Rev. d'Ent. vii, p. 203.

Biblopectus : characters noticed, p. 210 ; species allied to *minutissimus* redescribed, pp. 211-213 ; *affinis* and *obtusus* noticed, p. 380 ; GUILLEBEAU, Rev. d'Ent. vii.

B. affinis, France, *reitteri*, Europe, p. 212, *obtusus*, Dalmatia, p. 213, *delhermi*, p. 379, *aculeatus*, p. 380, France, GUILLEBEAU, Rev. d'Ent. vii, n. spp.

Eurhexizus, Sharp, = (*Rhexidius*, Casey) ; REITTER, Deutsche e. Z. xxxii, p. 264.

Fustiger hetschkoi, Brazil, REITTER, Deutsche e. Z. xxxii, p. 225, n. sp.

Commatocerus capensis, *majusculus*, S. Africa, PÉRINGUEY, p. 84, Tr. S. African Phil. Soc. iv, n. spp.

Commatocerodes, n. g., for *C. raffrayi*, n. sp., pl. i, fig. 3, Transvaal ; PÉRINGUEY, p. 85, Tr. S. African Phil. Soc. iv.

PAUSSIDÆ.

[*Cf.* DOHRN (197, 198), GESTRO (307), PÉRINGUEY (667).]

Raffray's collection of *Paussidæ* acquired by Oberthur ; Bull. Soc. Ent. Fr. (6) viii, p. cliv.

Paussus humboldti, West., = (*ayresi*, Pér.), *germari*, West., = (*novaculatus*, Pér.) ; PÉRINGUEY, Tr. S. African Phil. Soc. iv, rectifications, p. 191.

P. adiuventus, Bagamoyo, DOHRN, S. E. Z. xlix, p. 393 ; *P. rugiceps*, p. 82, pl. i, fig. 4, *propinquus*, p. 83, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv : n. spp.

Lebioderus candezzi, Borneo, DOHRN, S. E. Z. xlix, p. 243, n. sp.

SCYDMENIDÆ.

[*Cf.* MARSEUL (553), MEINERT (575), REITTER (724, 727).]

Scydmanus sharpi, n. n. for *Eumicrus subnudus*, Sharp, *nec* Schauffuss ; REITTER, Wien. ent. Z. vii, p. 42.

Scydmanus and *Eumicrus*, Reitter's use of these erroneous ; SEIDLITZ, Deutsche e. Z. xxxii, pp. 301 & 302. *Scydmanus* and *Cyrtoscydmanus*, use of, note on ; REITTER, Wien. ent. Z. vii, p. 41.

Cyrtoscydmanus circassicus, Circassia, REITTER, Wien. ent. Z. p. 321 ; *S. successor*, Caucasus, *id.* Deutsche e. Z. xxxii, p. 421 : n. spp.

Scydmanus tarsatus, larva described and figured, with details ; MEINERT (575).

Neuraphes imperialis, saucius, p. 319, *vulcanus, satyrus*, p. 320, Circassia, REITTER, Wien. ent. Z. vii, n. spp.

Nunophthalmus, Motsch., characters for ; REITTER, Wien. ent. Z. vii, p. 318.

Cephennium austriacum, Lower Austria, REITTER, Deutsche e. Z. xxxii, p. 420, n. sp.

SILPHIDÆ and SPHÆRIIDÆ.

[Cf. FAIRMAIRE (238, 239, 242, 252), LEWIS (510), MATTHEWS (319), PÉRINGUEY (667), REITTER (724, 727, 728).]

Reitter's nomenclature of genera animadverted on ; SEIDLITZ (825).

Necrophorus orientalis, Motsch., note on ; FAIRMAIRE, Rev. d'Ent. vii, p. 115.

Plomascopus (sub *Necrophorus*) *plagiatus*, Men., = (4-*maculatus*, Kr., *duvidis*, Fairm., *plagiaticipennis*, Lew.) ; LEWIS, Ent. xxi, p. 9.

Silpha opaca destroying beet ; GIARD (309, 310) : injuries to mangold ; ORMEROD, Rep. xii, pp. 91-96 : dipterous parasite of noticed ; Bull. Ins. Agr. xiii, p. 116. *S. littoralis*, structure of labrum of ; LABONNE, Mem. Soc. Z. Fr. i, p. 228, pl. vii, figs. 1 & 2. *S. punctulata*, Ol., note on, PÉRINGUEY, Tr. S. African Phil. Soc. iv, p. 87 : notes on the 11 Japanese species ; LEWIS, Ent. xxi, pp. 8 & 9.

S. silvatica, p. 8, *subrufa, nigropunctata*, p. 9, Japan, LEWIS, Ent. xxi ; *S. metallescens*, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 56, fig. 4 ; *S. capicola*, S. Africa, PÉRINGUEY, p. 86, Tr. S. African Phil. Soc. iv ; *S. subcaudata*, Yunnan, FAIRMAIRE, p. 14, Ann. Ent. Belg. xxxii ; *S. bituberosa*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 114 : n. spp.

Peltis (*Phosphuga*) *atrata*, L., n. var. *rostrata* ; REITTER, p. 153, Wien. ent. Z. vii.

Necrodes biguttulus, Fairm., figured, pl. i, fig. 6 ; FAIRMAIRE, Miss. Sci. Cap Horn, vi.

Pteroloma sallæi, Mexico, MATTHEWS, Biol. Centr. Am. Col. ii (1), p. 97, pl. iii, fig. 11, n. sp.

Nargus phæacus, Corfu, REITTER, Wien. ent. Z. vii, p. 133, n. sp.

Choleva obscuripes, p. 151, *C. (Nargus) ovata*, p. 152, Circassia, REITTER, Wien. ent. Z. vii ; *C. fimbriata*, Costa Rica, p. 98, pl. iii, fig. 10, *semipicea*, Guatemala, p. 99, MATTHEWS, Biol. Centr. Am. Col. ii (1) : n. spp.

Catops circassicus, Circassia, REITTER, Wien. ent. Z. vii, p. 152, n. sp.

Bathyscia pumilio, Reitt., = (*murialdii*, Balbi) ; REITTER, Deutsche e. Z. xxxii, p. 331.

Attumbra femoralis, Araxes Valley, REITTER, Deutsche e. Z. xxxii, p. 421, n. sp.

Catopomorphus angustus, Caucasus, p. 422, *colchicus, funebris*, Greece *arenarius*, Europe, p. 423, REITTER, Deutsche e. Z. xxxii, n. spp.

Ptomaphugus, validity of this and the allied genera discussed, p. 100 nomenclature of *Dendroxena* and other genera of *Silphidæ* : REITTER, Deutsche e. Z. xxxii, pp. 101-107.

P. forticornis, Mexico, p. 100, pl. iii, fig. 9, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. sp.

Colon: the genus described; *C. clavatum*, Mann., described from Guatemala and figured, pl. iii, fig. 12; MATTHEWS, Biol. Centr. Am. Col. ii (1).

Apathidium circassicum, p. 154, *filicorne*, *lederi*, p. 155, Circassia, REITTER, Wien. ent. Z. vii, n. spp.

Sphæriidæ, affinities of discussed; MATTHEWS, Biol. Centr. Am. Col. ii (1), p. 156.

Sphærius, Walzl, described at length; MATTHEWS, Biol. Centr. Am. Col. ii (1), p. 157.

S. tropicus, Guatemala, MATTHEWS, Biol. Centr. Am. Col. ii (1), p. 157, n. sp.

Eucinetus, cf. *Dascillidæ*.

TRICHOPTERYGIDÆ and SCAPHIDIIDÆ.

[Cf. FLACH (277), MATTHEWS (319).]

The Central American species are described at length, and additional characters given for some of the genera, by MATTHEWS, Biol. Centr. Am. Col. ii (1), pp. 126-156.

Ptinella championana, fig. 22, *incerta*, fig. 21, figured, pl. iii; Biol. Centr. Am. Col. ii (1).

Championella nubigena figured, pl. iii, fig. 24; Biol. Centr. Am. Col. ii (1).

Trichopteryx godmani figured, pl. iii, fig. 20; Biol. Centr. Am. Col. ii (1).

T. rufilabris, Caucasus, FLACH, Wien. ent. Z. vii, p. 103, n. sp.

Ptilium tropicum, Matth., figured, pl. iii, fig. 23; Biol. Centr. Am. Col. ii (1).

P. sahlbergi, Finland, *hopffgarteni*, Croatia, p. 101, *lederi*, Lenkoran, *oertzeni*, Greece, p. 102, FLACH, Wien. ent. Z. vii, n. spp.

Throscidium invisibile, Niet., figured, pl. iii, fig. 25; Biol. Centr. Am. Col. ii (1).

Scaphidium mexicanum, Cast., var. figured (as *S. rubicundum*), pl. iv, fig. 2; Biol. Centr. Am. Col. ii (1).

S. marginatum, Guatemala, p. 160, pl. iv, fig. 1, *unicolor*, p. 161, *varietabile*, pl. iv, figs. 3 & 4, p. 162, Centr. America, *lineaticolle*, Mexico, p. 163, pl. iv, fig. 5, *transversale*, Panama, fig. 6, *atrum*, Mexico, figs. 7 & 8, p. 164, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

Cyparium sallai, Mexico, p. 166, pl. iv, fig. 10, *terminale*, Centr. America, fig. 9, *championi*, Panama, fig. 11, p. 167, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

Brocera major, *erichsoni*, p. 169, *punctipennis*, p. 170, Centr. America, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

Scaphisoma balticum, Mexico, pl. iv, fig. 12, *lotan*, Guatemala, p. 172, *lanatum*, Nicaragua, fig. 13, *nebulosum*, Guatemala, p. 173, *thoracicum*, Mexico, p. 174, *guatemalense*, p. 175, *neotropiale*, Centr. America, *puncticolle*, *beere*, Panama, p. 176, *punctatissimum*, Guatemala, *longicolle*, Mexico, p. 177, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

Toxidium gammaroides, Lec., figured, pl. iv, fig. 15 ; Biol. Centr. Am. Col. ii (1).

T. bifasciatum, Guatemala, pl. iv, fig. 14, *punctatum*, Mexico, p. 179, *ovatum*, p. 180, *parvum*, p. 181, Guatemala, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

HISTERIDÆ.

[Cf. LEWIS (319, 504, 507), MARSEUL (554), PÉRINGUEY (667), SCHMIDT (804, 805, 806).]

The habits of formicarious *Histeridæ* ; LEWIS, Ent. xxi, pp. 289-294.

Phylloma plagigerum, Guatemala, pl. iv, fig. 16, *facetum*, Panama, figs. 17 & 17a, LEWIS, p. 183, Biol. Centr. Am. Col. ii (1), n. spp.

Hololepta sternincisa, var. ♂, = (*parvifossa*, Mars.) ; SCHMIDT, Notes Leyd. Mus. x, p. 122. *H. indica*, Er., = (*batchiana*, Mars.) ; LEWIS, Ann. Mus. Genov. (2) vi, p. 631.

H. canalicollis, p. 185, pl. iv, fig. 18, *placida*, p. 186, Guatemala, LEWIS, Biol. Centr. Am. Col. ii (1), n. spp.

Lioderma dorcoides, p. 187, pl. iv, fig. 20, *subnitidum*, p. 189, Mexico, LEWIS, Biol. Centr. Am. Col. ii (1), n. spp.

Macrosternus alluaudi, *M. ? assinius*, W. Africa, MARSEUL, p. ix, Bull. Soc. Ent. Fr (6) viii, n. spp.

Apobletes connectens, Panama, pl. iv, fig. 21, p. 190, LEWIS, Biol. Centr. Am. Col. ii (1) ; *A. gestroi*, p. 632, *marginicollis*, p. 633, Burma, LEWIS, Ann. Mus. Genov. (2) vi : n. spp.

Platysoma columellare, Guatemala, p. 190, pl. iv, figs. 22 & 23, LEWIS, Biol. Centr. Am. Col. ii (1) ; *P. maculatum*, p. 633, *dorice*, *arcuatum*, p. 634, *suturale*, *exortitum*, p. 636, *brevistriatum*, p. 637, Burma, LEWIS, Ann. Mus. Genov. (2) vi : n. spp.

Phelister cumanensis, pl. iv, figs. 24 & 25, *panamensis*, pl. v, fig. 2, figured ; Biol. Centr. Am. Col. ii (1).

P. godmani, Panama, pl. v, fig. 1, *eximius*, Nicaragua, fig. 3, p. 191, *crenulatus*, Panama, fig. 6, *uncistriatus*, Guatemala, fig. 5, p. 192, *canalis*, Centr. America, p. 193, *carinatus*, Guatemala, fig. 4, p. 194, LEWIS, Biol. Centr. Am. Col. ii (1), n. spp.

Homalodes clavulus, Guatemala, LEWIS, p. 197, pl. v, fig. 7, Biol. Centr. Am. Col. ii (1), n. sp.

Hister leseleuci, Mars., includes two species ; SCHMIDT, Notes Leyd. Mus. x, p. 122. *H. parallelus*, Redt., = (*elongatus*, Mars.) ; LEWIS, p. 638, Ann. Mus. Genov. (2) vi.

H. planiceps, *genue*, Bharno, LEWIS, p. 639, Ann. Mus. Genov. (2) vi ; *H. künigi*, Amurland, SCHMIDT, p. 189, Hor. Ent. Ross. xxii ; *H. ciliatus*, p. 199, pl. v, fig. 8, *truncatisternum*, fig. 14, p. 201, *patagiatus*, fig. 13, *politus*, p. 202, Mexico, *bullatus*, Guatemala, fig. 10, *nodatus*, fig. 11, *montivagus*, fig. 12, Panama, p. 203, LEWIS, Biol. Centr. Am. Col. ii (1) : n. spp.

Epiurus frontalis, Kirsch, figured, pl. v, figs. 15 & 15a ; Biol. Centr. Am. Col. ii (1).

E. parvulus, p. 205, pl. v, fig. 16, *scitus*, fig. 17, p. 207, *dubius*, Guatemala, *rufulus*, Mexico, fig. 18, p. 208, LEWIS, Biol. Centr. Am. Col. ii (1), n. spp.

Carcinops garbigliettii, Mars., figured, pl. v, fig. 24; Biol. Centr. Am. Col. ii (1).

C. multistriata, pl. v, fig. 19, *punctinotum*, fig. 25, Mexico, p. 209, *fumosa*, p. 211, fig. 20, *cavisternum*, fig. 21, *atrata*, fig. 22, p. 212, *eximia*, fig. 23, p. 213, Guatemala, LEWIS, Biol. Centr. Am. Col. ii (1), n. spp.

Paromalus persimilis, *annellus*, p. 641, *fee*, p. 642, Burma, LEWIS, Ann. Mus. Genov. (2) vi; *P. verminosus*, p. 214, *selectus*, *notabilis*, pl. vi, fig. 1, *rogalis*, fig. 2, Guatemala, *pupillus*, Mexico, p. 215, *orbis*, Brit. Honduras, *sobrinus*, *similis*, fig. 3, p. 216, *fissus*, *jejunos*, p. 217, *sincerus*, Guatemala, *inflatus*, Brit. Honduras, fig. 4, p. 218, *divaricatus*, fig. 5, *sulcatus*, figs. 7 & 7a, Guatemala, *sagillatus*, Mexico, figs. 6 & 6a, p. 219, LEWIS, Biol. Centr. Am. Col. ii (1) : n. spp.

Renia salvini, Mexico, p. 220, pl. vii, figs. 6 & 7, LEWIS, Biol. Centr. Am. Col. ii (1), n. sp.

Eucleasea, n. g., p. 220, for *E. godmani*, n. sp., Guatemala, p. 221, pl. vi, figs. 8 & 9; LEWIS, Biol. Centr. Am. Col. ii (1).

Saprinus atrocyaneus, Turcomania, SCHMIDT, p. 190, Hor. Ent. Ross. xxii; *S. certus*, *orobitis*, Burma, LEWIS, p. 643, Ann. Mus. Genov. (2) vi; *S. solitarius*, Mexico, p. 222, pl. vi, fig. 10, *quassitus*, Guatemala, fig. 11, *gemmenus*, Centr. America, fig. 12, p. 225, LEWIS, Biol. Centr. Am. Col. ii (1) : n. spp.

Trypanæus bombacis, ♀ noticed; LEWIS, p. 644, Ann. Mus. Genov. (2) vi. *T. torpedo*, Lew., pl. vi, fig. 13, *tuberculifrons*, Mars, fig. 17, figured; Biol. Centr. Am. Col. ii (1).

T. montiragus, Guatemala, p. 228, pl. vi, fig. 14, *ampullaceus*, Panama, fig. 15, *bifidus*, Centr. America, figs. 16 & 16 a, p. 229, *columellaris*, fig. 18, Guatemala, *vulcanius*, figs. 19 & 19a, *aculeatus*, fig. 20, Panama, p. 230, *parallelus*, figs. 21 & 22, *angustatus*, figs. 23 & 24, Guatemala, p. 231, LEWIS, Biol. Centr. Am. Col. ii (1), n. spp.

Teretrius fee, Bharno, LEWIS, p. 644, Ann. Mus. Genov. (2) vi; *T. longulus*, Mexico, *orbis*, Guatemala, LEWIS, p. 232, Biol. Centr. Am. Col. ii (1) : n. spp.

Teretriosoma impressisternum, pl. vi, fig. 25, *conigerum*, pl. vii, figs. 2, 2a, b, Guatemala, *immarginatum*, Panama, pl. vii, fig. 1, p. 233, *cari-frons*, figs. 3, 3a, b, *paradozum*, figs. 4 & 4a, Mexico, p. 234, LEWIS, Biol. Centr. Am. Col. ii (1), n. spp.

Saulister, n. g.^c, p. 87, near *Monoplius*, for *S. singularis*, n. sp., S. Africa, p. 88, PÉRINGUEY, Tr. S. African Phil. Soc. iv.

Trapus mnizechi, Mars., figured, pl. vii, fig. 5; Biol. Centr. Am. Col. ii (1).

Heterius, list of the species, p. 154; *H. gratus*, *brunneipennis*, *plicicollis*, *aptatus*, *tristriatus*, characters noticed, pp. 145 & 146; LEWIS, Ann. N. H. (6) ii.

H. bonnairei, p. 236, *politus*, p. 237, Algeria, *fusculus*, p. 238, Andalusia, SCHMIDT, Ent. Nachr. xiv, n. spp.

Sternocelis, n. g., p. 144, for a portion of *Heterius* (the characters of several known species being noticed), including also the following new

* On p. 87 this is called *Marseulia*, but in corrigenda it is changed as above.

species: *ucutangulus*, Tangier, p. 146, *cancer*, *bedeli*, p. 147, *walkeri*, p. 149, *fulvus*, p. 150, *pectoralis*, p. 152, Algeria, *mauritanicus*, Morocco, p. 153; LEWIS, Ann. N. H. (6) ii.

Sutrapes reitteri, Transcaucasus, LEWIS, p. 153, Ann. N. H. (6) ii, n. sp.

Onthophilus flohri, Mexico, LEWIS, p. 235, Biol. Centr. Am. Col. ii (1), n. sp.

Homalopygus æquatus, Panama, LEWIS, p. 236, pl. vii, fig. 8, Biol. Centr. Am. Col. ii (1), n. sp.

Cachezia, n. g., for *C. puberula*, n. sp., Nicaragua, pl. vii, fig. 9; LEWIS, p. 236, Biol. Centr. Am. Col. ii (1).

Bacanius sculptus, Guatemala, Antilles, p. 237, pl. vii, fig. 10, *ignobilis*, Panama, fig. 11, *humatus*, Guatemala, fig. 12, *mexicanus*, Mexico, p. 238, LEWIS, Biol. Centr. Am. Col. ii (1), n. spp.

Abraeus indicus, Rangoon, LEWIS, p. 645, Ann. Mus. Genov. (2) vi, n. sp.

Æletes, Horn, noticed and merged in *Acritus*; LEWIS, Biol. Centr. Am. Col. ii (1), p. 239.

Acritus hilum, p. 239, *fuliginus*, *peculiaris*, *bipartitus*, *quadristriatus*, pl. vii, fig. 13, p. 240, *corpuseculus*, *liliputianus*, fig. 14, p. 241, Guatemala, LEWIS, Biol. Centr. Am. Col. ii (1), n. sp.

Idolia antennata, Guatemala, pl. vii, fig. 15, *scitula*, Panama, fig. 16, LEWIS, p. 242, Biol. Centr. Am. Col. ii (1), n. spp.

Murmidius irregularis, Reitt., figured, pl. viii, fig. 1; Biol. Centr. Am. Col. ii (1).

M. rectistriatus, Mexico, p. 243, pl. viii, fig. 2, LEWIS, Biol. Centr. Am. Col. ii (1), n. sp.

Myhocerus pilifer, Guatemala, LEWIS, p. 244, pl. vii, figs. 17 & 18, Biol. Centr. Am. Col. ii (1), n. sp.

PHALACRIDÆ.

Notes on the classification of the family; SHARP, Biol. Centr. Am. Col. ii (1), pp. 244-246.

Phalacrus rufipes, p. 246, *obscurus*, Mexico, *germanus*, *flavicornis*, *scutellaris*, pl. vii, fig. 19, p. 247, *lucidus*, p. 248, Guatemala, SHARP, Biol. Centr. Am. Col. ii (1), n. spp.

Olibrus guatemalensis, Centr. America, *vulgaris*, Guatemala, p. 248, *rubiginosus*, *teapensis*, *mexicanus*, p. 249, Mexico, *partitus*, *posticalis*, Guatemala, p. 250, *porrectus*, *submaculatus*, p. 251, Centr. America, *substrigosus*, Guatemala, *atomarius*, *microsternus*, p. 252, *latipes*, p. 253, Panama, SHARP, Biol. Centr. Am. Col. ii (1), n. spp.

Eustilbus, n. n. for *Stilbus*, Seid., including the following n. spp.: *distinctus*, *gracilis*, *mollis*, pl. vii, fig. 20, p. 254, *æqualis*, Guatemala, *placidus*, Mexico, p. 255; SHARP, Biol. Centr. Am. Col. ii (1).

Liophalacrus, n. g., p. 255, for *L. bicolor*, pl. vii, fig. 21, *rotundus*, Panama, n. spp., p. 256; SHARP, Biol. Centr. Am. Col. ii (1).

Acydomus, n. g., p. 256, for *A. aciculatus*, n. sp., Central America, p. 257, pl. vii, fig. 22; SHARP, Biol. Centr. Am. Col. ii (1).

NITIDULIDÆ.

[*Cf.* OLLIFF (634), PÉRINGUEY (667).]Notes on the synonymy of Seidlitz's *Fauna baltica*, ed. 2; REITTER. Wien. ent. Z. vii, pp. 255-258.*Soronia tessellata*, Cape Town, PÉRINGUEY, p. 89, Tr. S. African Phil. Soc. iv, n. sp.*Lasiodactylus calvus*, Norfolk I., OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 1003, n. sp.*Pocadius ferrugineus*, n. varr. *adustus*, p. 175, *thoracicus*, p. 176; REITTER, Wien. ent. Z. vii.*Ips faciatus* and allies, note on; CAULFIELD, p. 198, Canad. Ent. xx.*Rhizophagus parallellocollis* frequenting corpses in coffins; MÉGNIN, Rev. Sci. Bourb. i, pp. 262-264, and FAUVEL, *t. c.* p. 280: habits discussed; KRAATZ (466) and FOWLER, Ent. M. M. xxiv, p. 276.

TROGOSITIDÆ.

[*Cf.* FAIRMAIRE (252), LÉVEILLÉ (501, 502, 503), LEWIS (508).]Catalogue of the family: its composition, the name *Trogosita* rejected; LÉVEILLÉ, Ann. Soc. Ent. Fr. (6) viii, pp. 429-448.*Alindria cyanicornis*, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 56, fig. 5; *A. cribricollis*, Tenasserim, LÉVEILLÉ, Ann. Mus. Genov. (2) vi, p. 605; *A. parallela*, Laos, &c., *id.* p. 411, Ann. Soc. Ent. Fr. (6) viii: n. spp.*Airora grouvellei*, Colombia, LÉVEILLÉ, p. 411, Ann. Soc. Ent. Fr. (6) viii, n. sp.*Temnochila sulcisternum*, Jamaica, *jansoni*, Minas Geraes, p. 412, *olivicolor*, Ecuador, *variicolor*, Colombia, p. 413, *bedeli*, Venezuela, *brevieri*, Colombia, p. 414, *nigritarsis*, Brazil, *groucellei*, Centr. America, p. 415, *sallei*, Yucatan, p. 416, *parva*, St. Domingo, *hubbardi*, Florida, p. 417, LÉVEILLÉ, Ann. Soc. Ent. Fr. (6) viii, n. spp.*Marnia*, n. g., p. 417, for *M. sipolisi*, n. sp., Brazil, p. 418; GROUVELLE. Ann. Soc. Ent. Fr. (6) viii.*Tenebrioïdes fairmairei*, Tonga-Tabou, p. 418, *fulvolineatus*, Brazil, *brunneus*, Cayenne, *circumcinctus*, Yucatan, p. 419, *reitteri*, *cardicollis*, Brazil, p. 420, *gucatanicus*, *difficilis*, Yucatan, *anceps*, Mexico, p. 421, *carbonarius*, Cayenne, p. 422, *incertus*, *latus* (Chev.), *harpaloïdes*, p. 423, *rufolimbatus*, *bonvouloiri*, p. 424, Mexico, *gounellei*, S. America, *sennerillei*, *fenestratus*, Mexico, p. 425, *humeralis*, *pumilus*, Colombia, p. 426, *nigro-ciridis*, Mexico, p. 427, LÉVEILLÉ, Ann. Soc. Ent. Fr. (6) viii, n. spp.*Leperina cincta*, New Caledonia, LÉVEILLÉ, p. 427, Ann. Soc. Ent. Fr. (6) viii, n. sp.*Leptonyx sedilloti*, Colombia, LÉVEILLÉ, p. 428, Ann. Soc. Ent. Fr. (6) viii, n. sp.*Gymnochila angulicollis* and *sparsata*, Th., are one species: *rava*, Fab., = (*squamosa*, Gray); LÉVEILLE, p. exxiii, Bull. Soc. Ent. Fr. (6) viii.*Phanodesta cribraria*, Bl., = (*picea*, Germ., and *cordatocollis*, Reit.);

P. variegata, Germ., = (*costipennis*, Reit.) ; LÉVEILLÉ, p. ccvii, Bull. Soc. Ent. Fr. (6) viii.

Ostoma yvoni, All., larva described ; REY, p. xxxviii, Bull. Soc. Ent. Fr. (6) viii.

Acrops cicatricosa, Reitt., var. *rugosa* ; LÉVEILLÉ, p. 606, Ann. Mus. Genov. (2) vi.

A. fce, Tenasserim, p. 606, *birmanica*, Bhamo, p. 607, LÉVEILLÉ, Ann. Mus. Genov. (2) vi ; *A. higoniu*, Japan, LEWIS, Ent. xxi, p. 220 : n. spp.

Nemotoma punctatum, Brazil, LÉVEILLÉ, p. 411, Ann. Soc. Ent. Fr. (6) viii, n. sp.

COLYDIIDÆ and RHYSODIDÆ.

[Cf. BLACKBURN (77), LEWIS (505, 506), REITTER (727).]

Colydiidæ includes *Lathridiide* and *Thorictide*, as well as *Leiestes*, *Mycetæa*, *Lithophilus*, and *Murmidiu* ; SEIDLITZ, Fauna baltica, ed. 2, p. 56, Gattungen.

Tarphius liliputanus, Luc., and Algerian allies, synonymy of ; BEDEL, p. 286, Ann. Soc. Ent. Fr. (6) viii.

Ditoma pulchra, p. 191, *obscura*, *perforata*, *parva*, p. 193, *hilaris*, p. 194, *lineatocollis*, p. 195, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Bothrioleres variabilis, *tibialis*, p. 196, *costatus*, p. 197, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Cerylon grandicollis, Circassia, REITTER, Wien. ent. Z. vii, p. 176, n. sp.

Rhysodidæ : affinities and habits of the family discussed, pp. 76-78 ; catalogue of the species, pp. 84 & 85 ; LEWIS, Ann. N. H. (6) ii.

Epiglymmius, n. g., for *E. comes*, Japan, n. sp., and including *Rhysodes sulcatus*, auct. ; LEWIS, p. 79, Ann. N. H. (6) ii.

Rhysodes niponensis, trophi, p. 484, figs. 1-4, *R. brouni*, n. n. for *ater-rinus*, Broun, *eminens*, Broun, ♂ = (*orbitosus*, Broun), *arcuatum*, Chev., = (*pensus*, Broun), pp. 84 & 85 ; LEWIS, Ann. N. H. (6) ii.

R. crassiusculus, p. 80, *sulcicollis*, *rostratus*, p. 81, *niponensis*, Japan, *leleri*, Caucasus, p. 82, LEWIS, Ann. N. H. (6) ii.

Clinidium veneficum, Japan, p. 83, trophi figured, p. 484 ; LEWIS, Ann. N. H. (6) ii, n. spp.

CUCUJIDÆ.

[Cf. BLACKBURN (77, 78), GROUVELLE (345), LEWIS (511), PÉRINGUEY (667)]

Pasandra transaalensis, Africa, PÉRINGUEY, p. 90, Tr. S. African Soc. iv, n. sp.

Hectarthrum corticinum, Zambesi, PÉRINGUEY, Tr. S. African Phil. Soc. iv, p. 91, n. sp.

Cucujus opacus, Japan, LEWIS, Ent. M. M. xxv, p. 84, n. sp.

Læmophlæus carinicollis, *incertus*, Burma, GROUVELLE, p. 627, Ann. Mus. Genov. (2) vi ; *L. difficilis*, p. 840, *lindi*, p. 841, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Silvanus planatus and *bidentatus* queried as sexes of one species; LINELL, Ent. Am. iii, p. 171.

Cryptomorpha lindi, p. 198, *olliffei*, *victoriae*, p. 199, *delicatula*, p. 200, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x : n. spp.

Psammiszechus convexus, Burma, GROUVELLE, p. 628, Ann. Mus. Genov. (2) vi, n. sp.

Inopeplus, the species tabulated; GROUVELLE, p. 626, Ann. Mus. Genov. (2) vi.

I. bicolor, Tenasserim, GROUVELLE, Ann. Mus. Genov. (2) vi, p. 625, n. sp.

CRYPTOPHAGIDÆ, LATHRIDIIDÆ, and MYCETOPHAGIDÆ.

[*Cf.* BELON (55), BLACKBURN (77), RAGUSA (708), REITTER (724, 727, 728).]

Cryptophagus affinis, St., var. ? *australis*, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 201.

C. corpulentus, p. 170, *circassicus*, p. 171, Circassia, REITTER, Wien. ent. Z. vii; *C. jakolewi*, Siberia, p. 424, *posticus*, Banat, p. 425, REITTER, Deutsche e. Z. xxxii : n. spp.

Haplophus faustii, n. n. for *robustus*, Reitt.; SEIDLITZ, Fauna baltica, ed. 2, p. 263, Arten.

Atomaria linearis injurious to beet; Bull. Ins. Agr. xiii, p. 118: destroying mangold; FITCH, Ess. Nat. ii, p. 255. *A. cephenoides* n. var. *circassica*; REITTER, Wien. ent. Z. vii, p. 173.

A. singularis, Circassia, REITTER, Wien. ent. Z. vii, p. 172, n. sp.

Sternodea miki, Circassia, REITTER, Wien. ent. Z. vii, p. 173, n. sp.

Spaniophenus caucasicus, Elisabethpol, REITTER, Wien. ent. Z. vii, p. 105, n. sp.

Holoparamesus atomus, Sicily, RAGUSA, Nat. Sicil. viii, p. 37, n. sp.

Dasycerus grouvellei, California, BELON, p. xcvi, C.R. ent. Belg. xxxii, n. sp.

Lathridius costatipennis, *satelles*, p. 202, *semicostatus*, *nigromaculatus*, p. 203, *minor*, *apicalis*, *punctipennis*, p. 204, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Atritonus irregularis, Circassia, REITTER, Wien. ent. Z. vii, p. 174, n. sp.

THORICIDÆ, DERMESTIDÆ, BYRRHIDÆ.

[*Cf.* FAIRMAIRE (229, 243), HELLER (369), PÉRINGUEY (667).]

Thoricus capensis, S. Africa, PÉRINGUEY, p. 88, Tr. S. African Phil. Soc. iv, n. sp.

Les *Dermestides* d'Europe et circa par E. Reitter, traduits de l'Allemand par LEPRIEUR; Rev. d'Ent. vii, pp. 384-413.

Dermestes bicolor, F., injurious to pigeons; NOLL (626). *D. corax*, note on; REITTER, Ent. Nachr. xiv, p. 57. *D. peruvianus*, Cast., description of larva, with remarks on the larvæ of the genus; HELLER, Verh. z.-b. Wien, xxxviii, pp. 157-160, pl. iv.

Anthrenus afer, Cape Town, PÉRINGUEY, p. 90, Tr. S. African Phil. Soc. iv, n. sp.

Hadrotoma variegata = (*Attagenus siculus*, Allard); LEPRIEUR, Rev. d'Ent. vii, p. 400.

Pachmys, n. n. for *Brachmys*, Fairm.; FAIRMAIRE, Miss. Sci. Cap Horn, vi, p. 29. *P. puberulus*, figured, pl. i, fig. 7, and redescribed, p. 30.

Limnichus tonkineus, Tonkin, FAIRMAIRE, p. 337, Ann. Soc. Ent. Fr. (6) viii, n. sp.

PARNIDÆ, GEORYSSIDÆ, HETEROCERIDÆ.

[Cf. BLACKBURN (77), COSTA (164), GROUVELLE (346), SCHÖNFELDT (814), SHARP (835).]

Parnus hirsutus, Livland, SEIDLITZ, Fauna baltica, ed. 2, p. 126, Arten; *P. bicolor*, *sulcipennis*, Sardinia, COSTA, Atti Acc. Nap. (2) i, p. 86: n. spp.

Helichus sinensis, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 115, n. sp.

Elsianus pubescens, pl. vii, fig. 1, *coquereli*, fig. 2, S. America, GROUVELLE, p. 396, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Pachyparnus, n. g., for *P. tonkineus*, n. sp., Tonkin; FAIRMAIRE, p. 338, Ann. Soc. Ent. Fr. (6) viii.

Cyllæpus gigas, pl. vii, fig. 3, p. 397, *brasiliensis*, fig. 4, *sharpi*, fig. 5, p. 398, *reitteri*, fig. 6, p. 399, S. America, GROUVELLE, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Heterelmis dubia, pl. vii, fig. 7, p. 399, Brazil, GROUVELLE, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Helmis gournellei, pl. vii, fig. 9, p. 400, *emiliae*, fig. 10, *concolor*, fig. 11, p. 401, *sulcata*, fig. 12, p. 402, *subsulcata*, pl. viii, fig. 1, *granosa*, fig. 2, p. 403, *flavipes*, fig. 3, *gibbosa*, fig. 4, p. 404, *rufomarginata*, fig. 5, *granata*, fig. 6, p. 405, *micros*, fig. 7, *pilula*, fig. 8, p. 406, *levigata*, fig. 9, p. 407, *longipes*, fig. 10, p. 408, Brazil, GROUVELLE, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Microdes tonkinus, Tonkin, GROUVELLE, p. 409, pl. viii, fig. 12, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Elmomorphus, n. g., p. 242, for *E. brevicornis*, n. sp., Japan, p. 243; SHARP, Ann. N. H. (6) ii.

Senelmis foveicollis, Japan, SCHÖNFELDT, Ent. Nachr. xiv, p. 193; *S. trisulcatus*, Tonkin, FAIRMAIRE, p. 338, Ann. Soc. Ent. Fr. (6) viii: n. spp.

Leptelmis, n. g., p. 243, for *L. gracilis*, n. sp., Japan, p. 244; SHARP, Ann. N. H. (6) ii.

Georyssus canalifer, Japan, SHARP, p. 244, Ann. N. H. (6) ii, n. sp.

Heterocerus infimus, Tonkin, FAIRMAIRE, p. 339, Ann. Soc. Ent. Fr. (6) viii; *H. flindersi*, *multimaculatus*, Australia, BLACKBURN, p. 205, Tr. R. Soc. S. Austr. x: n. spp.

LUCANIDÆ.

[Cf. FAIRMAIRE (238, 242, 243), GAILLARD (299), WATERHOUSE (915).]

Lucanus sp., larvæ destroying railroad ties; LOCKWOOD (518).

Hexarthrus davidsoni, India, WATERHOUSE, p. 260, *Ann. N. H.* (6) i, n. sp.

Paragus, n. g., for *P. listeri*, n. sp., Christmas I.; GAHAN, p. 539, *P. Z. S.* 1888.

Dorcus tenuicostatus, Pekin, FAIRMAIRE, *Rev. d'Ent.* vii, p. 116; *D. laevadorsis*, Yunnan, FAIRMAIRE, p. 15, *Ann. Ent. Belg.* xxxii : n. spp.

Nigidius oxyotus, Tonkin, FAIRMAIRE, p. 339, *Ann. Soc. Ent. Fr.* (6) viii, n. sp.

SCARABÆIDÆ.

[*Cf.* PATES (44, 46, 319), BLACKBURN (74, 75, 77, 78), BLANCHARD (83) BORKE (89), BRENSKE (104), DELABY (179), FAIRMAIRE (238, 239, 242, 243, 244, 249, 250, 251, 253), GESTRO (307), HORN (391, 392, 393), KRAATZ (457), MACLEAY (544), OLLIFF (634), PÉRINGUEY (667), QUEDENFELDT (694, 696), REITTER (724, 729, 732), REY (747), SEIDLITZ (827), SMITH (853), WATERHOUSE (914), also *Cetoniini*, p. 122.]

Coprini.

Scarabeus platynotus, p. 201, *porosus*, p. 202, E. Africa, BATES, *Ent. M. M.* xxiv; *S. canaliculatus*, S. Africa, FAIRMAIRE, p. 177, *Ann. Soc. Ent. Fr.* (6) viii; *S. rostratus*, S. Africa, PÉRINGUEY, p. 92, *Tr. S. African Phil. Soc.* iv; *Ateuchus sulcipennis*, Centr. Africa, QUEDENFELDT, *B. E. Z.* xxxii, p. 161 : n. spp.

Pachysoma schinzii, S. Africa, FAIRMAIRE, p. 178, *Ann. Soc. Ent. Fr.* (6) viii; *P. marginatum*, p. 92, *denticolle*, p. 93, S. Africa, PÉRINGUEY, *Tr. S. African Phil. Soc.* iv : n. spp.

Gymnopleurus modestus, S. Africa, PÉRINGUEY, *Tr. S. African Phil. Soc.* iv, p. 94, n. sp.

Anachalcos aurescens, p. 202, *magnus*, p. 203, E. Africa, BATES, *Ent. M. M.* xxiv; *Chalconotus marginatus*, S. Africa, PÉRINGUEY, p. 94, *Tr. S. African Phil. Soc.* iv : n. spp.

Tessarodon variolosus, King's Sound, MACLEAY, *P. Linn. Soc. N.S.W.* (2) iii, p. 897, n. sp.

Temnoplectron occidentale, *lucidum*, *pygmaeum*, King's Sound, MACLEAY, p. 898, *P. Linn. Soc. N.S.W.* (2) iii, n. spp.

Catharsius sabaeus, Fab., = (*pithecius*, Fab.) ; WATERHOUSE, *P. Z. S.* 1888, p. 86.

C. xeostris (Dej.), Centr. Africa, WATERHOUSE, *l. c.*, n. sp.

Coptorchina nana, S. Africa, PÉRINGUEY, p. 95, *Tr. S. African Phil. Soc.* iv, n. sp.

Onitis castelnaudi, Har., figured, pl. i, fig. 9; PÉRINGUEY, *Tr. S. African Phil. Soc.* iv.

Oniticellus semimetallicus, Madagascar, FAIRMAIRE, *Le Nat.* (2) ii, p. 11, fig. 2, n. sp.

Onthophagus solivagus, Heyd., ♀ noticed; BATES, *P. Z. S.* 1888, p. 372.

O. katualensis, Centr. Africa, QUEDENFELDT, *B. E. Z.* xxxii, p. 164;

O. lugenda, *plato*, p. 203, *panoplus*, p. 237, *chrysopes*, *cometes*, *diocella*, *craesus*, p. 238, *epilampus*, p. 239, Tropical Africa, BATES, *Ent. M. M.*

xxiv ; *O. boschimanus*, p. 95, *tarsatus*, p. 96, *ebenus*, *haroldi*, pl. i, figs. 5 & 8, p. 97, *cupricollis*, pl. i, fig. 7, *obtusicollis*, p. 98, *biplagiatus*, p. 99, *suturalis*, p. 100, PÉRINGUEY, Tr. S. African Phil. Soc. iv ; *O. gonoderus*, Yunuan, FAIRMAIRE, p. 17, Ann. Ent. Belg. xxxii ; *O. devesus*, *fasiceps*, p. 899, *integriceps*, *salebrosus*, p. 900, *bicornis*, *propinquus*, p. 901, *villosus*, *cruciger*, *minuscus*, p. 902, *rubescens*, *humeralis*, *acuticeps*, p. 903, *incanus*, p. 904, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Diastellopalpus acuminicollis, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 162 ; *D. quinquedens*, p. 239, *thomsoni*, *ebeninus*, p. 240, *monapoides*, p. 241, Tropical Africa, BATES, Ent. M. M. xxiv : n. spp.

Phalops euplynes, Damaraland, BATES, Ent. M. M. xxiv, p. 241, n. sp.

Aphodius, synoptic tables of the species found in France ; FAUCONNET & MARCHAL, Feuille. Nat. xviii, pp. 112, 121, & 135 : many named varieties ; SCHILSKY (800).

A. pectoralis, France, REY, p. cxc, Bull. Soc. Ent. Fr. (6) viii ; *A. (Nialus) bilimeckii*, Switzerland, p. 149, *schlumbergeri*, Pyrenees, p. 150, SEIDLITZ, Faun. trans. (Arten) ; *A. (Acrossus) impressiusculus*, Pekin, FAIRMAIRE, p. cci, Bull. Soc. Ent. Fr. (6) viii : n. spp.

Mendidius rufescens, Astrachan, REITTER, Deutsche e. Z. xxxii, p. 425, n. sp.

Psammobius vulneratus, Muls., = (*Pleurophorus oripennis*, Desb.) ; BEDEL, p. 286, Ann. Soc. Ent. Fr. (6) viii.

Amnæcius semicæcus, p. 904, *occidentalis*, *elongatulus*, *rugicollis*, p. 905, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Paramnæcius, n. subg. of *Amnæcius* ; SEIDLITZ, Fauna baltica, ed. 2, p. 133, Arten.

Orphnus oryctoides, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 164, n. sp.

Enoplotrupes barmanicus, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 111 ; *E. yunnanus*, Yunnan, FAIRMAIRE, p. 17, Ann. Ent. Belg. xxxii : n. spp.

Geotrupes foveatus, note on ; KRAATZ, Deutsche e. Z. xxxii, p. 333.

G. armicrus, p. 17, *bicolor*, p. 18, Yunnan, FAIRMAIRE, Ann. Ent. Belg. xxxii ; *G. (Cnemotrupes) ulkei*, p. 106, *G. (Melanotrupes) hornii*, p. 107, N. America, BLANCHARD, Psyche, v : n. spp.

Melanotrupes, n. subg. of *Geotrupes* ; BLANCHARD, Psyche, v, p. 105.

Pellotrupes, n. subg. of *Geotrupes* ; BLANCHARD, Psyche, v, p. 105.

Bolboceras globuliforme, Maccl., *rotundatum* and *rubescens*, Hope, note on ; BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 845.

B. tatei, p. 842, *simpliciceps*, p. 844, *fenestratum*, p. 845, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii ; *B. ingens*, *cornutum*, p. 906, *hippopus*, p. 907, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii : n. spp.

On the position of the genus *Pleocoma*, Lec. ; translation of Gerstaecker's paper (1883) ; Ent. Am. iii, pp. 202-211. *Pleocoma* : systematic position discussed, the species described and figured ; HORN, Tr. Am. Ent. Soc. xv, pp. 1-18 : also (392).

P. rickseckeri, p. 5, *conjungens*, p. 7, *ulkei*, p. 9, N. America, HORN, t. c. also Ent. Am. iii, p. 234, n. spp.

Trox dilaticollis, alatus, p. 907, *asperatus, nodicollis*, p. 908, *asperius*, *vitreomaculatus*, p. 909, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Cleotus aphodioides, habits of; LUGGER, P. E. Soc. Wash. i, p. 84.

Liparochnrus politulus, globuliformis, King's Sound, MACLEAY, p. 910, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Melolonthini.

Lepitrix pistrinarius (Dej.), S. Africa, PÉRINGUEY, p. 100, Tr. S. African Phil. Soc. iv, n. sp.

Pachycnema farinosa, p. 101, *nigrolimbata*, p. 102, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, n. spp.

Scelophyssa virescens, S. Africa, PÉRINGUEY, p. 103, Tr. S. African Phil. Soc. iv, n. sp.

Hoplia elongata, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 165; *H. ingrata*, China, FAIRMAIRE, p. 18, Ann. Ent. Belg. xxxii; *H. aurantincta*, Tonkin, FAIRMAIRE, p. 340, Ann. Soc. Ent. Fr. (6) viii; n. spp.

Phyllotocus occidentalis, meyricki, W. Australia, BLACKBURN, p. 15, Tr. R. Soc. S. Austr., n. spp.

Serica muelleri, p. 165, *disparicornis*, p. 166, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii; *S. piceorufa, verticalis*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 118; n. spp.

Homalopia rufodorsata, China, FAIRMAIRE, p. 19, Ann. Ent. Belg. xxxii, n. sp.

Trochalus corpulentus, p. 167, *camaruensis*, p. 168, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, n. spp.

Pseudotrochalus böhmi, Lake Tanganyika, p. 194, *serlineatus*, W. Africa, p. 195, QUEDENFELDT, Ent. Nachr. xiv, n. spp.

Camenta brevicollis, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 169, n. sp.

Mæchidius major, crenaticollis, p. 16, *rugosipes*, p. 17, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x; *M. caviceps*, Australia, *id.*, P. Linn. Soc. N.S.W. (2) iii, p. 846; *M. fissiceps, froggatti*, King's Sound, MACLEAY, p. 911, *t. c.*: n. spp.

Liparetrus phanicopterus, Germ., characters of; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 18.

L. badius, lanaticollis, p. 912, *gagaticeps*, p. 913, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii; *L. fimbriatus*, p. 18, *caviceps*, p. 19, *senex, gracilipes*, p. 20, *diversus*, p. 21, *nigroumbratus, rothci*, p. 22, *analis*, p. 23, *insularis, simplex*, p. 24, *modestus, dispar, agrestis*, p. 25, *latus*, p. 26, *macleayi, aureus*, p. 27, *bicolor, granulatus*, p. 28, Australia, *sedani, perplexus*, p. 50, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x; *palmerstoni*, p. 847, *posticalis*, p. 848, *juvensis, fallax*, p. 849, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii; n. spp.

Macleayia, n. g., pp. 29 & 209, for *M. singularis*, p. 29, *hybrida*, p. 30, n. spp., W. Australia; BLACKBURN, Tr. R. Soc. S. Austr. x.

Scitula pallidula, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 919, n. sp.

Colpochila testaceipennis, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 913, n. sp.

Pachygaster, Germ., note on, with generic characters; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 207.

Heteronyx piceoniger, *corpulentus*, p. 914, *rufopiceus*, *froggatti*, p. 915, *capillatus*, *badius*, *subfuscus*, p. 916, *scutatus*, *transversicollis*, p. 917, *subglaber*, *subtrittatus*, *parvulus*, p. 918, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Macrosoma glaciale, figured, pl. i, fig. 8, FAIRMAIRE, Miss. Sci. Cap Horn, vi.

Orychirus, n. g., *Clavipalpidæ*?, p. 174, for *O. semisericeus*, Centr. Africa, n. sp., p. 175, QUEDENFELDT, B. E. Z. xxxii.

Diplotaxis crinigera, Guatemala, *corrota*, *coriacea*, p. 161, *sinuatipectus*, *juquilensis*, p. 162, *atramentaria*, *arctifrons*, p. 163, *metallescens*, *hebes*, p. 164, *magna*, *boops*, *flavisetis*, pl. ix, fig. 26, p. 165, *contracta*, p. 166, Mexico, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Chlenobia, Bl., referred to *Rhizotroginae*; BATES, Biol. Centr. Am. Col. ii (2), p. 166.

C. ægrola, pl. x, fig. 1, *scabripyga*, *latipes*, p. 167, *bicallosa*, Mexico, *tumulosa*, *æquata*, Centr. America, p. 168, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Chirodines, n. g., for *C. zunilensis*, n. sp., Guatemala, pl. x, fig. 2; BATES, p. 169, Biol. Centr. Am. Col. ii (2).

Listrochelus caratus, *microx*, pl. x, fig. 4, p. 170, *præsidii*, fig. 5, *scuticeps*, p. 171, *parilis*, *culminatus*, *mazimus*, fig. 6, p. 172, *oblongulus*, fig. 7, p. 173, Mexico, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Phytalus punctuliceps, Guatemala, p. 175, *nubipennis*, *ambigenus*, Mexico, p. 176, *cometes*, pl. x, fig. 8, p. 177, *prolixus*, Nicaragua, *trichodes*, p. 178, *macrocerus*, fig. 9, *platyrhinus*, fig. 10, p. 179, *batillifer*, fig. 11, *høgei*, fig. 12, *pentaphyllus*, fig. 13, p. 180, *seniculus*, *xanthocomus*, fig. 14, p. 181, *bolucoides*, *bucephalus*, fig. 15, *ægrotus*, p. 182, *lineatus*, fig. 16, *stramineus*, fig. 17, *ciudadensis*, p. 183, *fixilabris*, *poculifer*, p. 184, Mexico, BATES, Biol. Centr. Am. Col. ii (2); *P. ? latericostatus*, Tonkin, FAIRMAIRE, p. 340, Ann. Soc. Ent. Fr. (6) viii : n. spp.

Luchnosternu fusca, specific characters, pp. 180 & 182; ♂ and ♀ characters, fig. 41; SMITH, Ins. Life, i : larva habits, ravages, &c.; LINTNER (517). *L. fusca*, *gibbosa*, dates of appearance; WESTCOTT, Ent. Am. iv, pp. 154 & 155. *L. cribricollis*, Bl., pl. x, fig. 23, p. 189, *rurida*, Bl., pl. xi, fig. 1, p. 191, *testaceipennis*, Bl., fig. 6, p. 195, *rorulenta*, Burm., fig. 7, p. 196, *cinnamomea*, Bl., fig. 8, p. 197, *setifera*, Burm., fig. 11, p. 198, *rugipennis*, Schauf., fig. 12, p. 201, *rugulosa*, Bl., fig. 15, p. 203, *mxicana*, fig. 20, p. 212, figured and noticed at length; BATES, Biol. Centr. Am. Col. ii (2).

L. grandis, p. 181, fig. 40, *dubia*, p. 183, fig. 42, *arcuata*, p. 183, fig. 43, N. America, SMITH, Ins. Life, i; *L. diomphalia*, Korea, BATES, P. Z. S. 1888, p. 373; *L. castaniella*, pl. x, fig. 18, *heteronycha*, fig. 19, p. 186, *tridens*, Mexico, *piceola*, fig. 20, *scabrifrons*, fig. 21, Guatemala, p. 187, *leonina*, fig. 22, *pubicauda*, p. 188, *dulcis*, *xanthe*, p. 189, *rugicollis* (Sturm Cat.), fig. 24, *foreicollis*, p. 190, *punctulicollis*, fig. 25, *parumpunctata*,

p. 191, *dentex*, *anomaloïdes*, pl. xi, fig. 2, p. 192, *macrophylla*, fig. 3, Mexico, *dasyypoda*, fig. 4, Centr. America, p. 193, *polyphylla*, fig. 5, *heterophylla*, p. 194, Mexico, *chiriquina*, Panama, *parviretis*, p. 196, *sturmi*, fig. 9, p. 197, *gigantea*, Centr. America, fig. 10, p. 198, *crinalis*, p. 199, *setidorsis*, Costa Rica, *trichia*, Guatemala, p. 200, *lissopyge*, *hemilissa*, fig. 13, p. 201, *schizorhina*, fig. 14, Panama, *tenuipilis*, Centr. America, *seissa*, p. 202, *angulicollis*, p. 203, Mexico, *submetallica*, Guatemala, *euryaspis*, p. 204, *molopia*, p. 205, fig. 16, *segregans*, *divertens*, *setipennis*, p. 206, *nigerrima*, p. 207, fig. 17, *anodentata*, p. 208, *rubella*, *misteca*, fig. 18, *longipilosa*, p. 209, *brevidens*, p. 210, *microdon*, *porodera*, Mexico, *multipora*, Guatemala, fig. 19, p. 211, BATES, Biol. Centr. Am. Col. ii (2) : n. spp.

Ancylonycha carmelita, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 170, n. sp.

Eugaster, Lec., note on the genus, p. 214, with figure of *E. cribrosa*, pl. xi, fig. 21 ; BATES, Biol. Centr. Am. Col. ii (2).

Amphimallus tekkensis, Turcomania, BRENSKE, p. 355, Hor. Ent. Ross. xxii, n. sp.

Rhizotrogus solstitialis the victim of *Tiphia femorata* ; BERGSOE (63). *R. vulpinus*, Gyll., n. var. *persicus* ; BRENSKE, p. 359, Hor. Ent. Ross. xxii.

R. turcomanus, p. 356, *ballioni*, Turkestan, p. 357, BRENSKE, Hor. Ent. Ross. xxii ; *R. glabricollis*, Turcomania, *breuskei*, Circassia, REITTER, Wien. ent. Z. vii, p. 68 : n. spp.

Lepidiota rotkei, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 214, cf. also P. Linn. Soc. N.S.W. (2) iii, p. 853 ; *L. darwini*, p. 850, *delicatula*, p. 852, *degener*, p. 853, *rufa*, p. 854, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Melolontha, variation, form of pygidium ; DELABY, Bull. Soc. L. Nord France, viii, pp. 325-331. *M. vulgaris*, embryology ; GRABER (325). *M. hippocastani* n. var. *schwarzi*, p. 362, habits of, and of *M. vulgaris*, p. 363 ; KRAATZ, Deutsche e. Z. xxxii.

Cryptotrogus, n. g., near *Cyphonotus*, for *C. weisei*, n. sp., Asiatic Russia ; KRAATZ, Deutsche e. Z. xxxii, p. 206.

Ochranoxia, n. g., for *Anoxia semiflava*, Kr. ; KRAATZ, Deutsche e. Z. xxxii, p. 208.

Achranoxia, n. g., for *Polyphylla künigi*, Brenske (*infra*) : KRAATZ, Deutsche e. Z. xxxii, p. 208.

Polyphylla decemlineata, Say, larva described ; HORN, Tr. Am. Ent. Soc. xv, p. 21. *P. decemlineata*, Say, fig. 22, *petiti*, Guer., fig. 23, *hammondi*, Lec., fig. 24, figured, pl. xi ; Biol. Centr. Am. Col. ii (2).

P. koenigi, Turcomania, BRENSKE, p. 353, Hor. Ent. Ross. xxii ; *P. mongola*, p. xvi, *chinensis*, *daridis*, p. xvii, China, FAIRMAIRE, C.R. Ent. Belg. xxxii : n. spp.

Rhopaea magnicornis, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 210 ; *R. castaneipennis*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 919 : n. spp.

Sparmannia distincta, S. Africa, PÉRINGUEY, p. 103, Tr. S. African Phil. Soc. iv, n. sp.

Holophylla australis, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 212, n. sp.

Trichinopus flavipennis, Waterh., figured, pl. i, fig. 10; PÉRINGUEY, Tr. S. African Phil. Soc. iv.

Phalungosoma mechowii n. var. *novemfoliatum*; QUEDENFELDT, B. E. Z. xxxii, p. 171.

Goniorrhina, n. g., *Pachypodidæ*, p. 171, for *G. flaviceps*, n. sp., Centr. Africa, p. 172; QUEDENFELDT, B. E. Z. xxxii.

Taphrocephala, n. g., *Pachypodidæ*, p. 173, for *T. polita*, n. sp., Centr. Africa, p. 174; QUEDENFELDT, B. E. Z. xxxii.

Rutelini.

Anomalinae, note on the structure of the labrum in; BATES, Biol. Centr. Am. Col. ii (2), p. 216.

Phyllopertha villosella, Bl., referred to *Anomala*, p. 246, and figured, pl. xiii, fig. 19; BATES, Biol. Centr. Am. Col. ii (2). Table of the species of *Phyllopertha*; REITTER, Ent. Nachr. xiv, pp. 289-293.

P. lederi, Turcomania, p. 293, *caucasica*, Aralych, *puncticollis*, N. China, p. 294, REITTER, Ent. Nachr. xiv; *P. toluana*, Mexico, BATES, p. 216, pl. xii, fig. 1, Biol. Centr. Am. Col. ii (2) : n. spp.

Anomala rufocuprea, Motsch., *dubia*, Ball., *mongolica*, Fald., notes on; BATES, P. Z. S. 1888, pp. 373 & 374. *A. inconstans*, p. 225, pl. xii, fig. 14, *gemella*, Say, fig. 15, p. 226, *irrorata*, Bl., p. 230, fig. 22, *cincta*, Say, with n. var. *polychalca*, p. 236, *cupricollis*, Chev., with n. var. *coagulata*, pl. xiii, fig. 8, p. 238, *micans*, Burm., fig. 20, p. 245, *vidua*, Newm., pl. xiv, figs. 1 & 2, *rhizotrogoides*, Bl., pl. xiii, fig. 22, p. 247, figured and discussed; BATES, Biol. Centr. Am. Col. ii (2).

A. russaticeps, S. Africa, FAIRMAIRE, p. 179, Ann. Soc. Ent. Fr. (6) viii; *A. bilunata*, Tonkin, FAIRMAIRE, p. 341, Ann. Soc. Ent. Fr. (6) viii; *A. lævisulcata*, p. 19, *densestrigosa*, *punctigera*, *trivirgata*, p. 20, *semicastanea*, p. 21, China, FAIRMAIRE, Ann. Ent. Belg. xxxii; *A. (Paraspilota) impicta*, Korea, BATES, P. Z. S. 1888, p. 374; *A. discoidalis*, p. 217, pl. xii, fig. 2, *guatemalensis*, fig. 3, *chiriquina*, p. 218, Centr. America, *eulissa*, Panama, fig. 4, *compressicollis*, Guatemala, fig. 5, p. 219, *calligrapha*, fig. 6, *retusicollis*, Panama, *barbicollis*, Guatemala, p. 220, *cribriceps*, fig. 7, Mexico, *zapotensis*, fig. 8, Guatemala, p. 221, *histrionella*, fig. 9, Mexico, Nicaragua, *championi*, fig. 10, Guatemala, p. 222, *tolensis*, *ochrogastra*, fig. 11, Panama, *flavizona*, Guatemala, p. 223, *veræcrucia*, Mexico, *sejuncta*, Guatemala, Costa Rica, *höpfneri*, fig. 13, Mexico, p. 224, *cheerolati*, Mexico, *ruatana*, Honduras, p. 226, *flavilla*, fig. 18, *decolor*, *megalops*, fig. 19, p. 227, Mexico, *hispidula*, fig. 20, *denticollis*, fig. 17, Guatemala, p. 228, *polygona*, *trapezifera*, Costa Rica, *foraminosa*, fig. 21, Centr. America, p. 230, *atomogramma*, fig. 23, Mexico, *millepora*, Guatemala, p. 231, *ochroptera*, Centr. America, *amphicomus*, fig. 24, Panama, *eucoma*, Centr. America, p. 232, *semitonsa*, fig. 25, Panama, *stylphus*, pl. xiii, fig. 1, Mexico, *lævicollis*, fig. 2, p. 233, *doryphorina*, fig. 3, Guatemala, *chrysomelina*, fig. 4, Panama, p. 234, *sulcans*, fig. 5, Nicaragua, *rhodope*, fig. 6, Mexico, *costarica*, Nicaragua, &c., p. 235, *forreri*, fig. 7, *semicincta*, Mexico, *variolata*, p. 237, *cuethopyga*, Guatemala, p. 238, *megalia*, fig. 9,

Honduras, p. 239, *præcellens*, fig. 10, Nicaragua, *plurisulcata*, fig. 11, Guatemala, p. 240, *granulipyga*, Centr. America, fig. 12, *vanpatteni*, Costa Rica, *marginicollis*, fig. 13 (as *valdecostata*), p. 241, *nitescens*, fig. 14, Mexico, *calonota*, fig. 15, Panama, p. 242, *chlorotoides*, *specularis*, fig. 16, *chrysanthe*, fig. 17, p. 243, *xiphostetha*, Costa Rica, *phosphora*, fig. 18, Panama, p. 244, *xantholea*, Centr. America, p. 245, *nutans*, fig. 21, p. 246, *castaneiceps*, fig. 23, *attenuata*, fig. 25, p. 248, *carinifrons*, fig. 24, p. 249, Mexico, BATES, Biol. Centr. Am. Col. ii (2) : n. spp.

Aprosterna pygidialis, Tonkin, FAIRMAIRE, p. 341, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Singhala callusa, Tonkin, FAIRMAIRE, p. 343, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Mimela fuxamia, Korea, BATES, P. Z. S. 1888, p. 375, n. sp.

Popilia crenatipennis, p. 176, *violaceipennis*, p. 177, Central Africa, QUEDENFELDT, B. E. Z. xxxii ; *P. dilutipennis*, Tonkin, FAIRMAIRE, p. 342, Ann. Soc. Ent. Fr. (6) viii ; *P. difficilis*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 119 ; *P. utrocerulea*, Korea, BATES, P. Z. S. 1888, p. 376 : n. spp.

Epectinaspis mexicana, Burm., fig. 3, *moreletiana*, Bl., fig. 7, figured, pl. xiv ; Biol. Centr. Am. Col. ii (2).

E. pictipennis, pl. xiv, fig. 4, p. 250, *opacicollis*, fig. 5, Mexico, *chelifera*, fig. 6, Panama, p. 251, *ambigans*, Brit. Hond., p. 252, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Strigoderma castor and *pollux*, Newm., united as sexes of one species, p. 256, figured, pl. xiv, fig. 13, *orbicularis*, Burm., fig. 14, p. 257, noticed and figured ; BATES, Biol. Centr. Am. Col. ii (2).

S. intermedia, pl. xiv, fig. 8, p. 253, *protea*, p. 254, *sallæi*, fig. 9, *longicollis*, fig. 10, *contracta*, fig. 11, p. 255, *physopleura*, fig. 12, p. 256, *festiva*, *nigripennis*, fig. 15, p. 257, Mexico, *rutelina*, fig. 16, Nicaragua, Panama, *teupensis*, fig. 17, *tomentosa*, fig. 18, p. 258, *lampira*, figs. 19 & 20, p. 259, *costulipennis*, p. 21, Mexico, *auriventris*, fig. 22, Nicaragua, p. 260, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Callirhinus metallescens, Bl., figured, pl. xiv, figs. 23 & 24, noticed, p. 261 ; BATES, Biol. Centr. Am. Col. ii (2).

Dilophochila, n. g., for *D. bolacoides*, n. sp., Mexico, pl. xiv, fig. 25 ; BATES, p. 261, Biol. Centr. Am. Col. ii (2).

Platyrubela, n. g., for *P. cribrata*, n. sp., Costa Rica, pl. xv, fig. 1 ; BATES, p. 262, Biol. Centr. Am. Col. ii (2).

Ometis, Latr., merged in *Lagochile* ; BATES, p. 262, Biol. Centr. Am. Col. ii (2).

Lagochile circumdata, pl. xv, fig. 2, *chiriquina*, fig. 3, Panama, BATES, p. 263, Biol. Centr. Am. Col. ii (2), n. spp.

Calomacraspis, n. g., for *Macraspis*, group 1, Burm., and including *C. nigripennis*, Fga, n. sp., p. 264, BATES, *t. c.*

C. splendens, Burm., figs. 4 & 5, *concinna*, Bl., fig. 6, *haroldi*, Caud., fig. 7, figured, pl. xv : BATES, Biol. Centr. Am. Col. ii (2).

Antichira : the limits of the genus discussed, p. 265, *rufonitida*, Burm., pl. xv, fig. 9, *catomelana*, Dohrn, fig. 8, figured ; BATES, Biol. Centr. Am. Col. ii (2).

A. hirtiventris, pl. xv, fig. 10, p. 266, *iodiella*, fig. 11, p. 267, Panama, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Ptenomela, n. g., p. 267, for *Antichira gratiosa*, Shp., which is figured, pl. xv, fig. 12; BATES, Biol. Centr. Am. Col. ii (2).

Thyridium semicinctum, Panama, BATES, p. 268, pl. xv, fig. 13, Biol. Centr. Am. Col. ii (2), n. sp.

Ohlerota terminata, fig. 14, *cincticollis*, fig. 16, figured, pl. xv; Biol. Centr. Am. Col. ii (2).

C. flavicollis, Panama, pl. xv, fig. 15, p. 269, *belti*, Nicaragua, fig. 17, p. 270, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Rutelisca, n. g., for *R. Mohri*, n. sp., Mexico, pl. xv, figs. 18 & 19; BATES, p. 270, Biol. Centr. Am. Col. ii (2).

Rutela spe-ularis, Mexico, pl. xv, fig. 20, p. 271, *viridiaurata*, Costa Rica, p. 272, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Cnemida aterrima, Mexico, pl. xv, fig. 21, *intermedia*, Nicaragua, BATES, p. 272, Biol. Centr. Am. Col. ii (2), n. spp.

Parastasia sulcipennis, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 113, n. sp.

Pelidnota beltii, pl. xv, fig. 22, *prolixa*, Shp., fig. 24, *notata*, Bl., fig. 23, *virescens*, Burm., pl. xvi, fig. 2, with n. varr. *aureascens*, fig. 5, *jalapensis*, fig. 4, *chalcopus*, fig. 3, p. 274, *strigosa*, Bl., fig. 6, figured; BATES, Biol. Centr. Am. Col. ii (2).

P. costaricensis, Cache, pl. xvi, fig. 1, p. 274, *cupritarsis*, Panama, Colombia, p. 275, *punctulata*, Centr. America, fig. 7, p. 276, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Plusiotis victorina, pl. xvi, fig. 13, *marginata*, Wat., fig. 11, *chrysargyreus*, Sal., fig. 9, p. 279, *aurora*, Bouc., n. varr. *chrysopedila*, fig. 12, p. 277, *psittacina*, Sturm., p. 281, *costata*, Bl., figs. 14 & 15, *adelaida*, Hope, fig. 17, *lecontei*, Horn, fig. 19, noticed or figured; BATES, Biol. Centr. Am. Col. ii (2).

P. argenteola, Colombia, p. 277, *optima*, Costa Rica, pl. xvi, fig. 10, *chloneis*, Mexico, fig. 16, p. 282, *chalcothea*, Costa Rica, fig. 8, p. 284, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Chrysina macropus n. var. *mnizechi*; BATES, p. 285, Biol. Centr. Am. Col. ii (2).

Macropoides nietoi figured, pl. xvi, fig. 20; BATES, Biol. Centr. Am. Col. ii (2).

Macropus, Horn, merged in *Macropoides*; BATES, p. 286, Biol. Centr. Am. Col. ii (2).

Heterosternus rodriguezi, figured, pl. xvi, fig. 18; Biol. Centr. Am. Col. ii (2).

Parisolea, n. g., for *P. alba*, *fulva*, pl. xvii, fig. 1, n. spp., Mexico; BATES, p. 288, Biol. Centr. Am. Col. ii (2).

Cotulpa nigroænea, Guatemala, pl. xvi, fig. 22, *aureescens*, Mexico, fig. 21, BATES, p. 289, Biol. Centr. Am. Col. ii (2), n. spp.

Parachrysina, n. g., for *Chrysina truquii*, Thoms.; BATES, p. 289, Biol. Centr. Am. Col. ii (2).

Byrrhopolis lanigera, pl. xvii, fig. 2, *chihuahuæ*, Mexico, BATES, p. 291, Biol. Centr. Am. Col. ii (2), n. spp.

Phalangogonia obesa, Burm., note on, p. 291, *sperata*, Shp., = (*stipes*, Shp.), p. 292; BATES, Biol. Centr. Am. Col. ii (2).

P. lacordairei (= *obesa*, Lac., nec Burm.), Mexico, pl. xvii, fig. 3, p. 292, *parilis*, fig. 4, *championi*, fig. 5, Guatemala, p. 293, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Platycolia humeralis, Centr. America, pl. xvii, fig. 8, BATES, p. 293, Biol. Centr. Am. Col. ii (2), n. sp.

Panschizus, n. g., for *P. pallidus*, n. sp., W. Australia; BLACKBURN, p. 51, Tr. R. Soc. S. Austr. x. *P. pallidus* is possibly *Anoplosiethus opalinus*, Br.; *id. t. c.* p. 214.

Spodochlamys cupreola, Panama, pl. xvii, fig. 10, p. 294, BATES, Biol. Centr. Am. Col. ii (2), n. sp.

Bolax magnus, Panama, pl. xvii, fig. 6, *flavcolus*, Nicaragua, fig. 7, BATES, p. 295, Biol. Centr. Am. Col. ii (2).

Leucothyreus femoratus, Burm., figured, pl. xvii, fig. 9; Biol. Centr. Am. Col. ii (2).

Dynastini.

Aspidolea, n. g., for *A. singularis*, n. sp., Centr. America, pl. xvii, fig. 11; BATES, Biol. Centr. Am. Col. ii (2), p. 296.

Ancognatha humeralis, Burm., figured, pl. xvii, figs. 13 & 14; Biol. Centr. Am. Col. ii (2).

A. equata, pl. xvii, fig. 12, *laevigata*, p. 297, *quadripunctata*, fig. 15, p. 298, Mexico, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Cyclocephala stictica, Burm., pl. xvii, fig. 17, p. 300, *fuliginea*, Burm., fig. 20, *complanata*, Burm., fig. 21, p. 302, *lucida*, Burm., pl. xviii, fig. 4, p. 307, *mafuffa*, Burm., fig. 6, *picta*, Burm., fig. 7, *conspicua*, Shp., fig. 8, *proba*, Shp., fig. 11, figured and noticed; BATES, Biol. Centr. Am. Col. ii (2).

C. detecta, Mexico, pl. xvii, fig. 16, p. 300, *microspila*, fig. 18, Panama, *fasciolata*, fig. 19, p. 301, *sororia*, fig. 22, Centr. America, *epistomalis*, Guatemala, p. 303, *coahuila*, Mexico, fig. 23, *castaniella*, Costa Rica, fig. 24, p. 304, *curta*, fig. 25, *comata*, pl. xviii, fig. 1, p. 305, *guttata*, fig. 2, Mexico, *orulum*, Centr. and S. America, fig. 3, p. 306, *amblyopsis*, fig. 5, Centr. America, p. 307, *gravis*, Centr. and S. America, p. 308, *atriplex*, fig. 9, *ligyrina*, fig. 10, Nicaragua, p. 309, *melane*, *nigerrima*, fig. 12, Costa Rica, p. 310, *ampliata*, Nicaragua, p. 312, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Dyscinetus laevipunctatus, Centr. America, p. 311, *frater*, pl. xviii, fig. 13, Mexico, p. 312, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Heteronychus brevis, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 177; *H. lucidus*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Euetheola, n. g., for *Heteronychus humilis*, Burm., figured, pl. xviii, fig. 14; BATES, Biol. Centr. Am. Col. ii (2).

Podalgus nasutus, Burm., referred to *Ligyris*, p. 317, and figured, pl. xviii, fig. 17; BATES, Biol. Centr. Am. Col. ii (2).

Ligyris rugiceps, Lec., injurious to corn; HOWARD, *Ins. Life*, i, pp. 11-13.

L. lutiforea, pl. xviii, fig. 15, Centr. and S. America, p. 315, *lævicollis*, pl. xviii, fig. 16, Centr. America, p. 316, *pygidialis*, Yucatan, p. 317, *sallæi*, fig. 18, Centr. America, p. 318, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Bothynus quadridens, Tasch., figured and noticed, pl. xviii, fig. 22, p. 319; BATES, Biol. Centr. Am. Col. ii (2).

B. simplicitaris, p. 319, *monstrosus*, p. 320, Guatemala, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Novapus adelaidæ, *striatopunctulatus*, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 215, n. spp.

Pentodon australia, S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 216, n. sp.

Cheiroplatys: *Orizaba*, Fairm., merged in this, p. 320; *cultripes*, Fairm., figured, pl. xviii, figs. 19 & 20; *clunalis*, Lec. = (*marginatus* and *sullæi*, Fairm.), p. 321; BATES, Biol. Centr. Am. Col. ii (2).

C. occidentalis, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 921; *C. lissus*, Norfolk I., OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 1004; *C. fairmairei*, pl. xviii, figs. 23 & 24, Mexico, BATES, p. 321, Biol. Centr. Am. Col. ii (2) : n. spp.

Pseudopimelopus, n. g., p. 217, for *P. lindi*, n. sp., Australia, p. 218, and including *P. nothus*, Burm.; BLACKBURN, Tr. R. Soc. S. Austr. x.

Pimelopus porcellus, Er., redescribed; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 220.

P. crassus, p. 221, *P. ? dubius*, p. 222, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Pulmerstonia, n. g. (*Pimelopidae*), p. 855, for *R. bovilli*, n. sp., Australia, p. 857; BLACKBURN, P. Linn. Soc. N.S.W. (2) iii.

Isodon picipennis, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 921, n. sp.

Temnorhynchus raffrayi, Zanzibar, FAIRMAIRE, Le Nat. (2) i, p. 223, n. sp.

Xyloryctes telephus and *furcatus*, figured, pl. xix, and noticed, pp. 323 & 324; BATES, Biol. Centr. Am. Col. ii (2).

X. lobicollis, pl. xviii, fig. 21, p. 323, *corniger*, *teuthras*, pl. xix, fig. 3, p. 324, *thestalus*, pl. xviii, fig. 25, p. 325, Centr. America, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Megaceras philoctetes, figured, pl. xix, fig. 6, n. var. *septentrionis* described, p. 325; BATES, Biol. Centr. Am. Col. ii (2).

Heterogomphus chevrolati, figured, pl. xix, figs. 7, 8, & 9, n. var. *eurytus* described, p. 327; BATES, Biol. Centr. Am. Col. ii (2).

Dæmonoplus mnizechi, Th., figured, pl. xix, figs. 10 & 11; Biol. Centr. Am. Col. ii (2).

Enema pan, figs. 12 & 12a (*Iupercus*, Chev., being a var.), *endymion*, Chev., fig. 13, figured, pl. xix; BATES, Biol. Centr. Am. Col. ii (2).

Strategus julianus, figured, pl. xix, figs. 14 & 15, noticed, p. 330; BATES, Biol. Centr. Am. Col. ii (2).

Podischnus agenor, pl. xix, figs. 16-19, *tersander*, pl. xx, figs. 1 & 2, figured, noticed, p. 332; BATES, Biol. Centr. Am. Col. ii (2).

Golofa pizarro, Hope, synonymy, variation figured and described, pl. xx, figs. 3-7, p. 333; *imperialis*, figured, pl. xx, figs. 8-10, noticed, p. 334, BATES, Biol. Centr. Am. Col. ii (2).

G. costaricensis, Costa Rica, pl. xx, fig. 11, p. 334, *championi*, Guatemala, pl. xx, figs. 12-14, *imbellis*, figs. 16 & 18, Costa Rica, p. 335, BATES, Biol. Centr. Am. Col. ii (2), n. spp.

Dynastes hyllus, Chev., figured, pl. xx, fig. 17; Biol. Centr. Am. Col. ii (2). *D. tityus*, odour of; SMITH, P. E. Soc. Wash. i, p. 54.

Cavonus armatus, Shp., = (*Celothorax oberthueri*, Ancy;); BLACKBURN, Tr. R. Soc. S. Austr. x, p. 287.

C. sharpi, *sculpturatus*, p. 223, *parvus*, p. 224, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x; *C. turritus*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 922 : n. spp.

Neocavonus, n. g., p. 225, for *N. niger*, p. 225, *N. ? occidentalis*, p. 225, n. spp., Australia; BLACKBURN, Tr. R. Soc. S. Austr. x.

Corynophyllus andersoni, p. 227, *modestus*, p. 228, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Aneurystypus, n. g., for *A. calvus*, n. sp., Australia; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 230.

Semanopterus subaequalis, Hope, redescribed; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 231.

S. angustatus, p. 232, *minor*, p. 233, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Cryptodus fairmairei, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 923, n. sp.

Cetoniini.

[Cf. BATES (44, 46), BLACKBURN (78), FAIRMAIRE (238, 243, 245, 251), GESTRO (307), JANSON (418, 419, 420, 421), KRAATZ (458, 459, 460, 461, 462), MACLEAY (544), PÉRINGUEY (667), QUEDENFELDT (694), SEIDLITZ (827), WATERHOUSE (915).]

Goliathus cacicus, varieties of; *G. atlas* and *regius*, characters of discussed; KRAATZ, Deutsche e. Z. xxxii, pp. 269-272 : numerous named varr. figured, pl. vi, figs. 1-8.

Fornasinius vittatus, Masailand, BATES, Ent. M. M. xxiv, p. 241, n. sp.

Atopocerus, n. n. for *Westwoodia*, Lap. (nec Br.); KRAATZ, Deutsche e. Z. xxxii, p. 360.

Goliathopsis capreolus, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 118, n. sp.

Ceratorrhina harrisi, Westw., variation noticed; DOHRN, S. E. Z. xlix, p. 363.

C. (Dedyrrhina) macularia, Mamboia, BATES, Ent. M. M. xxiv, p. 242, n. sp.

Heterorrhina amena, Hope, n. var. *barmanica*; GESTRO, Ann. Mus. Genov. (2) vi, p. 99.

Coryphocera versicolor, Jolo I., JANSON, Notes Leyd. Mus. x, p. 207, n. sp.

Trigonophorus forciceps, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 114, n. sp.

Rhomborrhina flammea, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 115, n. sp.

Genyodontu jacksoni, Masailand, WATERHOUSE, p. 261, Ann. N. H. (6) i, n. sp.

Smaragdesthes guerini, Senegal, JANSON, Notes Leyd. Mus. x, p. 107, n. sp.

Heterophana fusco-costata, Madagascar, FAIRMAIRE, Le Nat. (2) ii, p. 11, fig. 3, n. sp.

Hæmatonotus fritschii, Kr., = (*Ischnostoma picta*, Pér.) ; PÉRINGUEY, Tr. S. African Phil. Soc. iv, rectifications, p. 191.

Macronota sericea, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 116 ; *M. ochraceipes*, *flavosparsa* (with 4 varr.), India, WATERHOUSE, p. 262, Ann. N. H. (6) i : n. spp.

Clinteria malayensis, Wall., var. from Burma described ; GESTRO, Ann. Mus. Genov. (2) vi, p. 99.

Discopellis wissmanni, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 179, n. sp.

Allorkino insignis, Chiriqui, JANSON, Notes Leyd. Mus. x, p. 119, n. sp.

Arygripa subfasciata, Rits., ♂ described ; JANSON, Notes Leyd. Mus. x, p. 118, woodcuts.

Gymnelis pantherina, Burm., should include *pelochroma* and *lutulenta*, Kirsch, *melagris*, Burm. ; *G. schistacea*, Burm., varr. = (*flaveola*, Burm., and *chontalensis*, Jans.) ; some varieties of *pantherina* named : KRAATZ, Deutsche e. Z. xxxii, pp. 295-300, pl. v, figs. 12-18.

G. mediana, Brasil, KRAATZ, Deutsche e. Z. xxxii, p. 299, n. sp.

Stalagmopygus, Kr., characters noted as trivial ; JANSON, Notes Leyd. Mus. x, p. 109.

Stalagmosoma buliola, Abyssinia, JANSON, Notes Leyd. Mus. x, p. 108, n. sp.

Leucocelis franki, S.W. Africa, JANSON, Notes Leyd. Mus. x, p. 100, n. sp.

Glycyphana cupreola, Kr., note on ; BATES, P. Z. S. 1888, p. 376.

G. louisæ, Yunnan, FAIRMAIRE, p. xxxv, Bull. Soc. Ent. Fr. (6) viii : (fully described, p. 22, Ann. Ent. Belg. xxxii) : n. sp.

Euryomia (*Glycyphana*) *velutina*, Natal, PÉRINGUEY, p. 103, Tr. S. African Phil. Soc. iv, n. sp.

Celidota splendens, figured, fig. 2, pl. clxxx ; WATERHOUSE, Aid.

Pogonotarsus flavovirgulatus, Madagascar, FAIRMAIRE, Le Nat. (2) ii, p. 32, fig. 2, n. sp.

Cucochrou obscura, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 858, n. sp.

Hemipharis froggatti, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 923, n. sp.

Polystigma vitticolle, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 923, n. sp.

Cetonia floricola, Hbst., habits of larva ; HACKER, Wien. Ent. Z. vii, p. 49. *C. æulensis*, Kolbe, note on ; BATES, P. Z. S. 1888, p. 377. *C. brevitarsis*, *æulensis*, and allies, synonymy of ; KRAATZ, Deutsche e. Z. xxxii, pp. 199-201. *C. albohirta*, Seidl., note on ; KRAATZ, Deutsche e. Z. xxxii, p. 365.

C. (Polosia) sternohirta, France, SEIDLITZ, Fauna baltica, ed. 2, p. 154 ;

C. delavayi, Yunnan, FAIRMAIRE, p. 21, Ann. Ent. Belg. xxxii ; *C. leucini*, p. 194, *pryeri*, p. 195, Loo Choo Is., JANSON, Ann. N. H. (6) i : n. spp.

PorphYROBAPTUS, n. g., near *Charadronota*, for *P. tigrina*, n. sp., W. Africa, pl. v, fig. 6 ; KRAATZ, Deutsche e. Z. xxxii, p. 411.

Charadronota quadrisignata n. var. *vittatipennis*, *C. pectoralis*, Bain., note on ; KRAATZ, Deutsche e. Z. xxxii, p. 414.

C. cureata, Niger, JANSON, Notes Leyd. Mus. x, p. 110 ; *C. quadrilunulata*, W. Africa, KRAATZ, Deutsche e. Z. xxxii, p. 413 : n. spp.

Pilinopyga, n. g., for *Diplognatha ornatipennis*, Hope ; KRAATZ, Deutsche e. Z. xxxii, p. 415.

Macroma oberthuri, Thibet, JANSON, Notes Leyd. Mus. x, p. 112, n. sp.

Cenochilus bifoveolatus, Tonkin, FAIRMAIRE, p. 344, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Agenius namaquensis, Pér., and *suturalis*, Waterh., are one species ; PÉRINGUEY, Tr. S. African Phil. Soc. iv, rectifications, p. 191.

Trichoptus incisus, S. Africa, PÉRINGUEY, p. 104, Tr. S. African Phil. Soc. iv, n. sp.

Stegopterus lugubris, S. Africa, PÉRINGUEY, p. 105, Tr. S. African Phil. Soc. iv, n. sp.

Incala stampflii, Liberia, JANSON, Notes Leyd. Mus. x, p. 113, n. sp.

Polyplastus, n. g., p. 114, for *P. assarius*, n. sp., Liberia, p. 115 ; JANSON, Notes Leyd. Mus. x.

Gnorinus variabilis n. var. *heydeni* ; BECKERS, Deutsche e. Z. xxxii, p. 24.

Valgus taligantii, Tonkin, FAIRMAIRE, p. 343, Ann. Soc. Ent. Fr. (6) viii, n. sp.

BUPRESTIDÆ.

[*Cf.* BLACKBURN (77, 78), FAIRMAIRE (238, 242, 243, 244, 252), GANGLBAUER (305), KERREMANS (434, 435), MACLEAY (544), PÉRINGUEY (667), QUEDENFELDT (694), REITTER (724, 729), RITSEMA (764), SCHÖNFELDT (815), WACHTL (902), WATERHOUSE (915).]

Sternocera : monograph of the genus, recognising 28 valid species, and figuring *dasypleura*, Koll., *feldspathica*, White, *wahlbergi*, Boh., *cariosicollis*, Fairm., *boucardi*, Saund., *syriaca*, Saund., *revoili*, Fairm., *orissa* var. *elliptica*, Kerr., *tricolor*, Kerr. ; KERREMANS, Ann. Ent. Belg. xxxii, pp. 47-100. *S. boucardi*, variation of ; KRAATZ, Deutsche e. Z. xxxii, p. 416, pl. v, figs. 19-23.

S. gerstaeckeri (= *fischeri*, Gers.), Africa, KERREMANS, Ann. Ent. Belg. xxxii, n. sp.

Julodis rufolimbata, Damaraland, FAIRMAIRE, p. 179, Ann. Soc. Ent. Fr. (6) viii ; *J. modesta*, S. Africa, PÉRINGUEY, p. 106, Tr. S. African Phil. Soc. iv : n. spp.

Chrysochroa rugicollis, variation ; LUCAS, p. lxxii, Bull. Soc. Ent. Fr. (6) viii.

C. alternans, Loo Choo, WATERHOUSE, p. 264, Ann. N. H. (6) i, n. sp.

Chrysotema summersi, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 1227, n. sp.

Chalcophora yunnan, Yunnan, FAIRMAIRE, p. 24, Ann. Ent. Belg.

xxxii; *Chalcophora* (in corrigenda, but in text *Acmaeodera*?, and *Chrysocbroa* in explanation of plate) *fossulata*, S. Africa, p. 108, pl. ii, fig. 1, PÉRINGUEY, Tr. S. African Phil. Soc. iv : n. spp.

Psiloptera subviolacea, p. 106, *cuprea*, p. 107, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, n. sp.

Dicerca prolongata, Lec., *divaricata*, Say, *obscura*, Fab., *spretta*, Gory, distinctive characters of; HAMILTON, pp. 64-66, Canad. Ent. xx. *D. prolongata*, Lec., habits; COCKERELL, Ent. M. M. xxiv, p. 232.

D. plasoni, Armenia, REITTER, Wien. ent. Z. vii, p. 70, n. sp.

Cæculus turcomanicus, Kr., = (*fulvovittis*, Reitt.) ; REITTER, Wien. ent. Z. vii, p. 41.

Pœcilonota dicercoides, Wladiwostok, REITTER, Deutsche e. Z. xxxii, p. 426 ; *P. (Lampra) beaucheni*, Sontay, FAIRMAIRE, p. 346, Ann. Soc. Ent. Fr. (6) viii : n. spp.

Lampra decipiens var. = (*mirifica*, Muls.) ; HEYDEN, Wien. ent. Z. vii, p. 216.

Antharia uniformis, purpurascens, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 1229, n. spp.

Philanthaxia andamana, Andaman Islands, KERREMANS, p. lxvi, C.R. ent. Belg. xxxii, n. sp.

Bubastes cylindricus, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 1228, n. sp.

Melobasis circumflexa, India, KERREMANS, p. lxxv, C.R. ent. Belg. xxxii ; *M. andersoni*, p. 234, *semistriata*, p. 235, *rothi*, p. 236, *soror*, p. 237, *sordida* = (*obscura*, Saund., nec Mael.), *meyricki*, p. 238, *puncticollis*, p. 239, *rotundicollis*, p. 241, *vittata*, p. 242, *intricata*, p. 243, *pretiosa*, p. 244, *speciosa*, p. 245, *semisuturalis*, *M. ? thoracica*, p. 246, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x ; *M. lauta*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 1228 : n. spp.

Eurybia australis, Port Lincoln, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 247, n. sp.

Anilara planifrons, Australia, BLACKBURN, t. c. p. 248, n. sp.

Neocuris, Deyr., note on the generic characters ; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 249.

N. fairmairei, p. 249, *pubescens*, p. 250, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x ; *N. viridiaurea*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 1229 : n. spp.

Polyceta tonkinæ, Tonkin, FAIRMAIRE, p. 345, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Polycetes foreicollis, Cambodia, FAIRMAIRE, p. 344, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Acmaeodera kœnigi, p. 193, *caspica*, p. 195, *ballionis*, p. 196, Turcomania, GANGLBAUER, Hor. Ent. Ross. xxii ; *A. inornata*, p. 107, *gentilis*, p. 108, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv ; *A. varicolor* (Chev.), India, KERREMANS, p. lxxvi, C.R. ent. Belg. xxxii ; *A. yunnana*, Yunnan, FAIRMAIRE, p. 23, Ann. Ent. Belg. xxxii : n. spp.

Sphenoptera foveipennis, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 180, n. sp.

Chrysobothris incana, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 1230, n. sp.

Coræbus amethystinus, habits; OLIVIER, Rev. Sci. Bourb. i, pp. 123 & 124.

Coræbus side, p. lxvii, *circularis*, p. lxviii, India, KERREMANS, C.R. ent. Belg. xxxii; *C. beauchenii*, p. 346, *intricatus*, *semipurpureus*, p. 347, Tonkin, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii; *C. aequalipennis*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 121 : n. spp.

Neospades, n. g., for *Coræbus chrysopygius*, Germ.; BLACKBURN, Tr. S. Austr. x, p. 251.

N. lateralis, p. 860, *simplex*, p. 861, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Ethon maculatus, W. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 250, n. sp.

Cisseis nubeculosa, Germ., and *M. chalcopetrum*, Germ., are one species; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 252.

C. obscura, p. 252, *parva*, p. 253, *constricta*, *lindi*, p. 254, *occidentalis*, p. 255, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x; *C. elongatula*, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 862; *C. fulgidicollis*, *nigripennis*, p. 1231, *apicalis*, *purpureotincta*, p. 1232, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Melybæus carinatus, Centr. Africa, QUEDENFELDT, p. 181, B. E. Z. xxxii; *M. murinus*, Andaman Is., KERREMANS, p. lxviii, C.R. ent. Belg. xxxii : n. spp.

Discoderes ochraceopictus, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 56, fig. 6, n. sp.

Cryptodactylus gracilis, Japan, SCHÖNFELDT, Ent. Nachr. xiv, p. 209, n. sp.

Agrilus auricollis, Kies., metamorphoses and habits; WACHTL, Wien. ent. Z. vii, pp. 293-297, pl. iii.

A. amplipennis, p. lxviii, *plivaticollis*, p. lxix, India, KERREMANS, C.R. ent. Belg. xxxii; *A. splendidicollis*, Tonkin, FAIRMAIRE, p. 348, Ann. Soc. Ent. Fr. (6) viii; *A. obscuripennis*, *ventricosus*, p. 120, *planipennis*, p. 121, Pekin, *id.* Rev. d'Ent. vii : n. spp.

Trachys hypocrita, Tonkin, FAIRMAIRE, p. 349, Ann. Soc. Ent. Fr. (6) viii; *T. daridis*, *tristis*, p. 23, *rufopubens*, *marginicollis*, p. 24, China, *id.* Ann. Ent. Belg. xxxii; *T. australis*, *nigra*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 1233 : n. spp.

Endelus weyersi, Sumatra, RITSEMA, Notes Leyd. Mus. x, p. 175, n. sp.

Germanica, n. g. (*Trachyder*), for *G. casuarinar*, n. sp., S. Australia; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 257.

Aplanisticus occidentalis, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 1233, n. sp.

THROSCIDÆ, MONOMMIDÆ, EUCNEMIDÆ.

[*Cf.* CHAMPION (319), FAIRMAIRE (243).]

Throsus, note on characters of the sexes; FAUVEL, Rev. d'Ent. vii, p. 69.

T. mediocris, p. 350, *infimus*, p. 351, Tonkin, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Hyporhagus opuntia, figured, pl. xxi, fig. 22; Biol. Centr. Am. Col. iv (1).

H. durangoensis, pl. xxi, fig. 23, Mexico, p. 473, *emarginatus*, fig. 24, Centr. America, p. 474, *obliteratus*, Panama, fig. 25, p. 475, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Aspathinea, n. g. (*Monommidae*), p. 475, for *A. oratus*, n. sp., Centr. America, pl. xxi, fig. 26, p. 476; CHAMPION, Biol. Centr. Am. Col. iv (1).

Bonvouloir's collection acquired by OBERTHUR, Bull. Soc. Ent. Fr. (6) viii, p. clix.

ELATERIDÆ.

[Cf. BUYSSON (121, 122), CANDÈZE (131), FAIRMAIRE (239, 241, 243), MACLEAY (544), REITTER (724, 727), WATERHOUSE (914).]

Notes on the habits of larvæ and the means of rearing them; BUYSSON (121).

Elateridæ injurious to tobacco-plant in Bessarabia; LINDEMAN, Bull. Mosc. 1888, pp. 69 & 60.

Adelocera tumulosa, Tenasserim, CANDÈZE, p. 668, Ann. Mus. Genov. (2) vi, n. sp.

Lacon inductus, *defectus*, p. 668, *mictus*, p. 669, *aceratus*, *acerbus*, p. 670, Burma, CANDÈZE, Ann. Mus. Genov. (2) vi; *L. froggatti*, *nigrescens*, *rubescens*, p. 1234, *incultus*, *rufopiceus*, p. 1235, *atricolor*, *lineatellus*, *subtilis*, p. 1236, *rubicundulus*, *foveicollis*, p. 1237, *maculosus*, *communis*, *alboguttatus*, p. 1238, *parrulus*, *fusciolatus*, p. 1239, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii: n. spp.

Anthracaclus, n. g., for *Alaus westermanni*, Cand., and *A. moricii*, n. sp., Cochin China; FAIRMAIRE, p. 349, Ann. Soc. Ent. Fr. (6) viii.

Tetralobus eribricollis, Centr. Africa, WATERHOUSE, P. Z. S. 1888, p. 86; *T. quadriforeatus*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 1240: n. spp.

Meristhus, validity of queried; HAMILTON, Canad. Ent. xx, p. 64.

Elius ventralis, Tenasserim, CANDÈZE, p. 673, Ann. Mus. Genov. (2) vi, n. sp.

Melanthoides fœc, Bhamo, CANDÈZE, p. 673, Ann. Mus. Genov. (2) vi, n. sp.

Monocrepidius scutellatus, *ragus*, *centralis*, Burma, CANDÈZE, p. 674, Ann. Mus. Genov. (2) vi; *M. primus*, p. 1240, *secundus*, *tertius*, p. 1241, *quartus*, *quintus*, *sextus*, p. 1242, *septimus*, *octavus*, p. 1243, *nonus*, *decimus*, p. 1244, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii: n. spp.

Heteroderes ornatus, Burma, CANDÈZE, p. 675, Ann. Mus. Genov. (2) vi, n. sp.

Elater leileri, Caucasus, REITTER, Deutsche e. Z. xxxii, p. 426; *E. longiusculus*, *cinnamomeus*, *inconspicuus*, King's Sound, MACLEAY, p. 1245, P. Linn. Soc. N.S.W. (2) iii: n. spp.

Anchastus nigradorsus, luctuosus, Burma, CANDÈZE, p. 676, Ann. Mus. Genov. (2) vi, n. spp.

Melanozanthus ligatus, Cand., referred to *Megapenthes*; CANDÈZE, Ann. Mus. Genov. (2) vi, p. 677.

Megapenthes birmanicus, p. 677, *lugubris, moderatus*, p. 678, Burma, CANDÈZE, Ann. Mus. Genov. (2) vi, n. spp.

Deromecus canaliculatus, figured, pl. i, fig. 9, and redescribed, p. 33; FAIRMAIRE, Miss. Sci. Cap Horn, vi.

Cryptohypnus dimidiatus, p. 1245, *semifasciatus*, p. 1246, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Cardiophorus vagus, p. 679, *pallidulus, addictus, fairmairei*, p. 680, *astutus, manuleatus*, p. 681, *vulneratus, malitiosus*, p. 682, *doriae*, p. 683, Burma, CANDÈZE, Ann. Mus. Genov. (2) vi; *C. froggatti, fasciolatus, quadrimaculatus*, King's Sound, MACLEAY, P. Linn. Soc. N.S.W. (2) iii, p. 1246: n. spp.

Melanotus alburnus, Tenasserim, CANDÈZE, p. 684, Ann. Mus. Genov. (2) vi, n. sp.

Athous scrutator, larva described; LINDEMAN, Bull. Mosc. i, p. 60. *A. alpinus*, Redt., var. = (*semirufus* and *venethorax*, Desb.), *subtruncatus*, Muls., = (*strictus*, Reiche, and *grandini*, Desb.); *A. niger*, var. *scrutator*, noticed; BUYSSON, p. lvii, Bull. Soc. Ent. Fr. (6) viii. *A. hemorrhoidalis* n. var. *feculentus*; BUYSSON, p. l, t. c. *A. circumscriptus*, Cand., var. = (*austriacus*, Desbr.); BUYSSON, p. l, t. c.

A. circassicus, Circassia, REITTER, Wien. ent. Z. vii, p. 180; *A. fex*, Tenasserim, CANDÈZE, p. 684, Ann. Mus. Genov. (2) vi: n. spp.

Logesius picipennis, Bach., n. var. *adrastoides*; REITTER, p. 180, Wien. ent. Z. vii.

Luminous larvæ doubtfully ascribed to *Pyrophorus*, &c., discussed; HAASE (352).

Hemilimerus gestroi, Burma, CANDÈZE, p. 685, Ann. Mus. Genov. (2) vi, n. sp.

Penia birmanica, p. 685, *fausta, lutea*, p. 686, Burma, CANDÈZE, Ann. Mus. Genov. (2) vi, n. spp.

Corymbites fuegensis, figured, pl. i, fig. 10, redescribed, p. 34; FAIRMAIRE, Miss. Sci. Cap. Horn, vi.

Pittonotus, Kies. (ined.), defined; SEIDLITZ, Fauna baltica, Arten, p. 169.

Allotrius sculpticollis, Tonkin, FAIRMAIRE, p. 350, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Ludigenus minor, Burma, CANDÈZE, Ann. Mus. Genov. (2) vi, p. 687, n. sp.

Ludius montandoni, Bucharest, BUYSSON, p. ccii, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Agriotex sputator, fungoid disease of; GIARD, Bull. Sci. Nord. (3) i, p. 303: destroyed by *Entomophthoræ*; L. C., Bull. Soc. L. Nord. Fr. vii, p. 111.

Agonischius fex, Tenasserim, CANDÈZE, p. 688, Ann. Mus. Genov. (2) vi, n. sp.

Silesis semicastaneus, p. 688, *rufus, gestroi*, p. 689, Burma, CANDÈZE, Ann. Mus. Genov. (2) vi, n. spp.

Ceroplastus, n. g., for *Plastocerus*, Schaum (*nec* Lec.); SEIDLITZ, *Fauna baltica*, ed. 2, p. 42, Gattungen.

Plastocerus, Lec., = (*Oclinodes*, Cand.): SEIDLITZ, *Fauna baltica*, ed. 2, p. 42, note.

Dicronychus lamellicornis, Congo, FAIRMAIRE, *Notes* Leyd. Mus. x, p. 255, n. sp.

CEBRIONIDÆ, RHIPIDOCERIDÆ, DASCILLIDÆ.

[*Cf.* FAIRMAIRE (243), PÉRINGUEY (667), REITTER (724).]

Cebrio: note on habits; ERDMANN, *Soc. Ent.* ii, p. 180.

Sandalus bowkeri, p. 109, *marginatus*, *proximus*, p. 110, *distinctus*, p. 111, S. Africa, PÉRINGUEY, *Tr. S. African Phil. Soc.* iv, n. spp.

Eubrianax maculicollis, Cochinchina, FAIRMAIRE, p. 351, *Ann. Soc. Ent. Fr.* (6) viii, n. sp.

Scirtes costulipennis, Tonkin, FAIRMAIRE, p. 352, *Ann. Soc. Ent. Fr.* (6) viii, n. sp.

Therius sumatrensis, Sumatra, FAIRMAIRE, *Bull. Soc. Ent. Fr.* (6) viii, p. cxcī.

Eucinetus strigosus, Irkutsk, REITTER, *Deutsche e. Z.* xxxii, p. 423, n. sp.

TELEPHORIDÆ (MALACODERMIDÆ).

[*Cf.* BLACKBURN (77), BOURGEOIS (92, 93, 94, 95, 96, 97), FAIRMAIRE (238, 239, 242, 243, 244, 249, 252), GESTRO (307), HAASE (352), HEYDEN (374), OLIVIER (638, 640, 641), REITTER (724, 727), RILEY (758).]

Lycides.

Metriorrhynchus miniatipennis, Hindostan, BOURGEOIS, p. xxv, *Bull. Soc. Ent. Fr.* (6) viii; *M. vittatus*, *meyricki*, Australia, BLACKBURN, p. 258, *Tr. R. Soc. S. Austr.* x: n. spp.

Cautires reflexicollis, Madagascar, FAIRMAIRE, *Le Nat.* (2) i, p. 57, fig. 7, n. sp.

Dictyoptera sanguinea, L., copula of 1 ♀ and 5 ♂; KRAATZ, *Deutsche e. Z.* xxxii, p. 222.

Ditoneces fabrei, Hindostan, BOURGEOIS, p. xxv, *Bull. Soc. Ent. Fr.* (6) viii, n. sp.

Plateros sycophanta, Hanoi, FAIRMAIRE, p. 352, *Ann. Soc. Ent. Fr.* (6) viii; *P. aurifer*, Ecuador, BOURGEOIS, p. clxv, *Bull. Soc. Ent. Fr.* (6) viii: n. spp.

Lampyrides.

Astraptor illuminator, Murray, and other unidentified luminous larvæ discussed at length: HAASE (352).

Hyas sulcipennis, Brazil, OLIVIER, p. clxvii, *Bull. Soc. Ent. Fr.* (6) viii, n. sp.

Æthra, descriptive notes on many species; *Æ. inexpectata*, figured, pl. i, fig. 1; OLIVIER, *Ann. Soc. Ent. Fr.* (6) viii, pp. 35-43.

Æ. limbipennis, *latreillei*, - *æthra*, p. 39, *decorata*, p. 40, 1888. [VOL. XXV.] n 9

elegantula, p. 41, Brazil, OLIVIER, Ann. Soc. Ent. Fr. (6) viii; *P. jucunda*, Brazil, *id.* p. clxvii, Bull. Soc. Ent. Fr. (6) viii : n. spp.

Vesta, table of the species; OLIVIER, Ann. Soc. Ent. Fr. (6) viii, pp. 43 & 44.

Psilocladus: *Cladocerus*, Kirsch, merged in this; OLIVIER, p. 45, Ann. Soc. Ent. Fr. (6) viii.

P. grandis, p. 45, *marginellus*, *capillatus*, p. 46, Brazil, OLIVIER, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Lamprocera thoracica, Rio Janeiro, OLIVIER, p. 47, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Megalophthalmus confusus, Amazons, OLIVIER, Ann. Soc. Ent. Fr. (6) viii, p. 48, n. sp.

Lucidota parvicollis, fig. 3, *serguttata*, fig. 2, *perpusilla*, fig. 4, figured, pl. i, positions of noticed, p. 49; OLIVIER, Ann. Soc. Ent. Fr. (6) viii.

Aspidosoma maculatum, de G., redescribed and figured, pl. i, fig. 5, p. 49; OLIVIER, Ann. Soc. Ent. Fr. (6) viii.

A. roseiventer, p. 50, *perplexum*, p. 51, Amazons, *pallens*, Paraguay, p. 52, *buyssoni*, Argentine Rep., pl. i, fig. 6, p. 53, OLIVIER, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Photinus frigidus, Cape Breton, p. 54, *bergi*, Uruguay, p. 55, *atomarius*, hab. ?, *melanodactylus*, Jamaica, p. 56, OLIVIER, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Diaphanes notaticollis, Gaboon, OLIVIER, p. 57, pl. i, fig. 7, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Luciola tetrasticta, S. Africa, FAIRMAIRE, p. 180, Ann. Soc. Ent. Fr. (6) viii; *L. hirticeps*, Tenasserim, OLIVIER, Ann. Mus. Genov. (2) vi, p. 429; *L. gigas*, India, p. 58, pl. i, fig. 8, *coarcticollis*, Australia, pl. i, fig. 9, *septemmaculata*, Senegal, p. 59, *hypocrita*, Fiji Is., p. 60, OLIVIER, Ann. Soc. Ent. Fr. (6) viii : n. spp.

Amydetes luciolooides, Brazil, p. 60, *flavicollis*, Uruguay, p. 62, OLIVIER, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Lampyris noctiluca, phosphorescence of eggs; LABOULBÈNE, p. cxxxiii, Bull. Soc. Ent. Fr. (6) viii, and LUCAS, *l. c.*

Phosphæus hemipterus, ♀ noticed; BOURGEOIS, p. lxxv, Bull. Soc. Ent. Fr. (6) viii : note on; LUCAS, p. xlix, *l. c.* : habits; JACOBSEN (409).

Rhagophthalmus tonkinensis, Tonkin, FAIRMAIRE, p. 352, Ann. Soc. Ent. Fr. (6) viii; *R. giganteus*, Yunnan, *id.* p. 25, Ann. Ent. Belg. xxxii : n. spp.

Zarhipis, note on luminous females : RILEY (758).

Telephorides.

Phengodes, larva of; RILEY, P. E. Soc. Wash. i, pp. 62 & 86.

P. insignis, Ecuador, BOURGEOIS, p. clxvi, Bull. Soc. Ent. Fr. (6) viii; *P. hieroungui*, Cordova, S. America, HAYSE, Deutsche v. Z. xxxii, pp. 154-161, pl. i, fig. 1 ♂, figs. 2 & 3 ♀, pl. ii, fig. 23, larva : n. spp.

Podabrus cephalinus, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 122, n. sp.

Chauliognathus cardiaspis, Brazil, BOURGEOIS, p. clxxvi, Bull. Soc. Ent.

Fr. (6) viii; *C. instratus*, Brazil, BOURGEOIS, p. cxc, t. c.; *C. domitus*, Ecuador, BOURGEOIS, p. cci, t. c. : n. spp.

Telephorus fuscus, L., habits noticed; HACKER, Wien. ent. Z. vii, p. 50.

T. stigmaticus, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 123; *T. proprius*, p. 260, *andersoni*, *vibex*, *paurillus*, p. 261, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x; *Cantharis metallica*, Ecuador, BOURGEOIS, p. clxxvi, Bull. Soc. Ent. Fr. (6) viii : n. spp.

Rugonycha melanura, fungoid disease of; GIARD, Bull. Sci. Nord. (3) i. p. 302.

R. circassicola, Circassia, REITTER, Wien. ent. Z. vii, p. 207, n. sp.

Haplous segmentarius, figured, pl. i, fig. 11, redescribed, p. 37; FAIRMAIRE, Miss. Sci. Cap Horn, vi.

Ichthyurus maculicollis, p. 119, *denticornis*, p. 121, *oxyurus*, p. 123, *carinifrons*, p. 125, *quadrivimaculatus*, p. 126, Burma, *gianellii*, Darjeeling, p. 127, note, GESTRO, Ann. Mus. Genov. (2) vi, n. spp.

Continuation of Faune gallorhénane by BOURGEOIS : pp. 157-172, consisting of *Malthini* part, have been published in connection with Rev. d'Ent. vii.

Apodistrus lobicollis, Circassia, REITTER, Wien. ent. Z. vii, p. 208, n. sp.

Malthodes castanicollis, p. 208, *sulphuribasis*, p. 209, Circassia, REITTER, Wien. ent. Z. vii, n. spp.

Malchinus bourgeoi, Circassia, REITTER, Wien. ent. Z. vii, n. sp.

Drilides.

Selasia pallida, Pér., figured, pl. 2, fig. 4; PÉRINGUEY, Tr. S. African Phil. Soc. iv.

Melyrides.

Laius conicicornis, p. 262, *nodicornis*, p. 263, *distortus*, p. 264, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Malachius fausti, ♀ described; REITTER, Deutsche e. Z. xxxii, p. 427.

M. dama, Smyrna, ABEILLE, Deutsche e. Z. xxxii, p. 70, n. sp.

Hedybius coronatus, Damaraland, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii, p. 181, n. sp.

Curphurus variiventris, Tonkin, FAIRMAIRE, p. 353, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Dasytes ceruleus, Deg., notes on the structure of larva of; HACKER, Wien. ent. Z. vii, pp. 50-52.

D. puncticollis, Circassia, REITTER, Wien. ent. Z. vii, p. 211, n. sp.

Henricopus, synopsis of the species of; BOURGEOIS, Ann. Soc. Ent. Fr. (6) viii, pp. 5-34, pl. ii.

H. baudii, Spain, BOURGEOIS, Ann. Soc. Ent. Fr. (6) viii, p. 28, pl. ii, fig. 2, n. sp.

Haploernemus limbipennis, Kies., = (*rufomarginatus*, Perr., *marginatus*, Rott., *koziorowiczii*, Desbr., and *xanthopus*, Kies.) ; HEYDEN, Wien. ent. Z. vii, p. 215.

Cerallus pekinensis, China, FAIRMAIRE, p. cci, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Melyris testaceipes, S. Africa, FAIRMAIRE, p. 182, Ann. Soc. Ent. Fr. (6) viii, n. sp.

CLERIDÆ.

[Cf. FAIRMAIRE (238, 242, 243, 244, 252), QUEDENFELDT (694).]

Tillus lewisii, Gorb., note on; FAIRMAIRE, Rev. d'Ent. vii, p. 123.

Stenocylidrus novemguttatus, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 71, fig. 3, n. sp.

Pallenis semiflava, fig. 8, *bipunctata*, fig. 9, *semigranosa*, fig. 10, p. 57, Madagascar, FAIRMAIRE, Le Nat. (2) i, n. spp.

Opilus vagedorsatus, S. Africa, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Dedana, n. g., near *Opilo*, for *D. rufodorsata*, n. sp., China, FAIRMAIRE, p. 26, Ann. Ent. Belg. xxxii.

Tillicera multipartita, Tonkin, FAIRMAIRE, p. 353, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Clerus ephippiger, Chev., note on; HEYDEN, Deutsche e. Z. xxxii, p. 73.

C. communimacula, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 124, n. sp.

Eurymanthus pustulosus, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 182, n. sp.

Enoplium balteatum, Tonkin, FAIRMAIRE, p. 354, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Opetiopalpus affinis, Tonkin, FAIRMAIRE, p. 354, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Mutilloides albidofasciatus, Fairm., is *Pæcilomorpha mutillaria*, Clk.; FAIRMAIRE, Notes Leyd. Mus. x, p. 271.

PTINIDÆ.

[Cf. FAIRMAIRE (244), PÉRINGUEY (667), REITTER (724).]

Ptinus capicola, *sericans*, p. 112, *affinis*, p. 113, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, n. spp.

Bruchus (Pseudoptinus) oertzeni, *leucaspis*, p. 428, *B. (Heteroptinus) calcarifer*, p. 429, *B. (Gynopterus) subroseus*, p. 430, Greece, REITTER, Deutsche e. Z. xxxii, n. spp.

Gibbium scotias, note on; REITTER, Ent. Nachr. xiv, p. 59: local variation discussed; KOLBE, t. c. 180-184; REITTER, t. c. pp. 252-254.

Niptus hololeucus destructive in houses; DUBOIS, Bull. Soc. L. Nord. Fr. viii, p. 167.

N. (Niptodes) lusitanus, Portugal, REITTER, Deutsche e. Z. xxxii, p. 427, n. sp.

Mezium echinatum, Capetown, PÉRINGUEY, Tr. S. African Phil. Soc. iv, p. 113, n. sp.

BOSTRICHIDÆ and CIOIDÆ.

[Cf. BLACKBURN (77), FAIRMAIRE (244).]

Sinozylon rufobasale, S. Africa, FAIRMAIRE, p. 179, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Apoleon, GORH., is not *Dysides*, Perty, GORHAM, Notes Leyd. Mus. x, p. 158.

Amphicerus bicaudatus, habits; HUBBARD, Ent. Am. iv, pp. 95 & 96.

Lyctus costatus, p. 265, *parallellocollis*, p. 266, *discedens*, p. 267, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Cis australis, p. 267, *æqualis*, *munitus*, *adelaidæ*, p. 268, *setiferus*, p. 269, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

TENEBRIONIDÆ.

[*Cf.* BALLION (37), BLACKBURN (77, 78), CHAMPION (319), FAIRMAIRE (238, 239, 240, 241, 242, 243, 244, 246, 248, 249, 251, 252), HORN (394), KRAATZ (463, 464), LINDEMAN (513), MACLEAY (547), OLLIFF (634), PÉRINGUEY (667), QUEDENFELDT (694), REITTER (724, 726, 727).]

Zophosides, Adesmiides.

Cardiosis fairmairei, Walfish Bay, PÉRINGUEY, p. 114, pl. ii, fig. 5, Tr. S. African Phil. Soc. iv, n. sp.

Anisosis dumarensis, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, p. 115, n. sp.

Adesmia unguicularis, Haag, = (*andersoni*, Pér.), *palva*, Haag, = *sulcipygia*, Pér.), *rugatipennis*, Haag, = (*stenocaroides*, Pér.); PÉRINGUEY, Tr. S. African Phil. Soc. iv, rectifications, p. 191. *A. rugatipennis*, fig. 8, *unguicularis*, fig. 9, figured; *id. t. c. pl. ii.*

A. tenuegranata, *lobicollis*, S. Africa, FAIRMAIRE, p. 183, Ann. Soc. Ent. Fr. (6) viii; *A. (Onymachris) plana*, p. 116, pl. ii, fig. 6, *hottentota*, p. 117, fig. 9, *boschimana*, fig. 7, *bullata*, p. 118, *aculeata*, p. 119, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv: n. spp.

Stenocara compacta, Africa, FAIRMAIRE, Notes Leyd. Mus. x, p. 256; *S. distincta*, p. 120, *velox*, p. 121, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv: n. spp.

Metriopus perforatus, Africa, FAIRMAIRE, Notes Leyd. Mus. x, p. 257, n. sp.

Tentyriides, Epitragides, Cryptochilides.

Anatolica externecostata, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 125, n. sp.

Microdera fausti, Kradnowodsk, KRAATZ, Deutsche e. Z. xxxii, p. 294, n. sp.

Hypsosoma rotundicollis, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 125, n. sp.

Rozonia, n. g., near *Rhytinota*, for *R. strigicollis*, n. sp., S. Africa, FAIRMAIRE, p. 184, Ann. Soc. Ent. Fr. (6) viii.

Asphaltesthes impressipennis, S. Africa, p. 184, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii.

Himantismus lineatopunctatus, *sphenarioides*, S. Africa, FAIRMAIRE, p. 185, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Cryptochile spinosa, S. Africa, PÉRINGUEY, p. 121, pl. iii, fig. 1, Tr. S. African Phil. Soc. iv, n. sp.

Nicandra, n. g., near *Horatoma*, for *N. costulipennis*, n. sp., S. Africa; FAIRMAIRE, p. 191, Ann. Soc. Ent. Fr. (6) viii.

Zopherides, Eurychorides, Adelostomides, Stenosides.

Zopherus mexicanus, cutting metal; DEVOE (184).

Eurychora rotundipennis, S. Africa, FAIRMAIRE, p. 191, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Geophanus plicicollis, S. Africa, FAIRMAIRE, p. 192, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Stenosia fausti, Taschkent, REITTER, Deutsche e. Z. xxxii, p. 430; *S. pusillima*, S. Africa, FAIRMAIRE, Tr. S. African Phil. Soc. iv, p. 197: n. spp.

Dichillus sanguinipes, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 126, n. sp.

Scaurides, Blaptides.

Scaurus striatus, var. *sardous*; COSTA, Atti Acc. Nap. (2) i, No. 13, p. 13.

Podoces, n. g. (*Scaurides*) p. 122, for *P. granulosa, gracilis*, p. 123, n. spp., S. Africa; PÉRINGUEY, Tr. S. African Phil. Soc. iv.

Blaps lusitanica, Hb., *miliaria*, Fisch., *damascena*, Fisch., *clotzeri*, Kar., *gibba*, Cast., *orientalis*, Sol., *cribrosa*, Sol., *græca, proxima, emondi*, Sol., *polychresta*, Forsk., *sulcata*, Fab., synonymy discussed at length; BALLION, Bull. Mosc. 1888, pp. 269-276. *B. plana*, Sol., synonymical note; KRAATZ, Wien. ent. Z. vii, p. 67. *B. kusteri*, n. n. for *lineata*, Küst., *sarda*, n. n. for *sulcata*, Küst.; BALLION, Bull. Mosc. p. 276. *B. ominosa*, Mén., synonymy, and sexual characters; KRAATZ, Wien. ent. Z. vii, p. 66.

B. carbonaria, p. 197, *B. (Rhizoblaps) eusoma*, p. 195, Turkestan, KRAATZ, Deutsche e. Z. xxxii, n. spp.

Hoplitoblaps, n. g., p. 26, for *H. fallaciosa*, n. sp., Yunnan, p. 27; FAIRMAIRE, Ann. Ent. Belg. xxxii.

Asidides, Pimeliides, Molurides.

Machla fuliginosa, S. Africa, FAIRMAIRE, Tr. S. African Phil. Soc. iv, p. 197, n. sp.

Asida maura, L., (= *silphoides*, L.); BEDEL, p. 286, Ann. Soc. Ent. Fr. (6) viii.

A. stigmaticollis, S. Africa, FAIRMAIRE, Tr. S. African Phil. Soc. iv, p. 198, n. sp.

Pisterotarsa, Motsch., note on; SÉNAC, p. iv, Bull. Soc. Ent. Fr. (6) viii: to be suppressed in favour of *Symplocnemis*, Solsky., it and *Podhomala*, Sol., are valid genera; REITTER, Deutsche e. Z. xxxii, pp. 329-331.

Uriclina, n. g., for *Podhomala nitida*, Bauli; REITTER, Deutsche e. Z. xxxii, p. 331: validity queried; SÉNAC, p. ccciii, Bull. Soc. Ent. Fr. (6) viii.

Uriela, Reit., merged in *Pimelia*; SÉNAC, p. lv, Bull. Soc. Ent. Fr. (6) viii.

Sympiezocnemis, note on; SÉNAC, pp. cciii & cciv, Bull. Soc. Ent. Fr. (6) viii.

Ildricus, n. g., near *Oncosoma*, for *I. diabolicus*, n. sp., S. Africa; FAIRMAIRE, Tr. S. African Phil. Soc. iv, p. 199: figured, pl. iii, fig. 3; PÉRINGUEY, Tr. S. African Phil. Soc. iv.

Dichtha acutecostata, Africa, FAIRMAIRE, Notes Leyd. Mus. x, p. 260, n. sp.

Distretus seminitidus, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 184, n. sp.

Psummodes egregius, Haag, figured, pl. iii, fig. 2; PÉRINGUEY, Tr. S. African Phil. Soc. iv.

P. asperulipennis, S. Africa, FAIRMAIRE, p. 193, Ann. Soc. Ent. Fr. (6) viii; *P. pelator*, p. 257; *misolampoides*, p. 258, *cardiopterus*, p. 259, Africa, id., Notes Leyd. Mus. x: n. spp.

Trachynotus regalis, fig. 4, *bohemani*, Haag, fig. 5, figured; PÉRINGUEY, pl. iii, Tr. S. African Phil. Soc. iv.

T. rufizonatus, S. Africa, FAIRMAIRE, p. 194, Ann. Soc. Ent. Fr. (6) viii; *T. sericeus*, p. 124, *angustus*, *attenuatus*, p. 125, *vicinus*, p. 126, *albulus*, p. 127, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv: n. spp.

Tynthlobia, n. g., for *T. quadricostata*, n. sp., Africa; FAIRMAIRE, Notes Leyd. Mus. x, p. 261.

Sepidium transversum, Africa, FAIRMAIRE, Notes Leyd. Mus. x, p. 262, n. sp.

Prolinides, Opatrides.

Platyscelis gages, Fisch., injurious to tobacco, metamorphoses; LINDEMAN, Bull. Mosc. 1888, pp. 56 & 57.

P. provostii, Pekin, FAIRMAIRE, p. cci, Bull. Soc. Ent. Fr. (6) viii, n. sp.
Oncotus planiusculus, S. Africa, FAIRMAIRE, p. 194, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Platynotus pekinensis, China, FAIRMAIRE, Rev. d'Ent. vii, p. 127, n. sp.

Opatrinus annamita, Coch n Chiua, FAIRMAIRE, p. 356, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Pedinus femoralis, injuries to tobacco, larva described, pp. 50-56; LINDEMAN, Bull. Mosc. 1888.

Gonopus ampliipennis, Africa, FAIRMAIRE, Notes Leyd. Mus. x, p. 263, n. sp.

Clitobius immarginatus, S. Africa, FAIRMAIRE, p. 195, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Amonalipus signaticollis, Africa, FAIRMAIRE, Notes Leyd. Mus. x, p. 264; *A. affinis*, *sculpturatus*, p. 128, *notaticollis*, p. 129, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv: n. spp.

Caelius linli, Adelaide, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 271, n. sp.

Nemanes, n. g., for *N. expansicollis*, n. sp., S. Africa; FAIRMAIRE, p. 195, Ann. Soc. Ent. Fr. (6) viii.

Cædiomorpha, n. g., for *C. australis*, n. sp., S. Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 272.

Opatrum intermedium, its injuries to tobacco; egg and larval stage discussed and described, pp. 19-49; *O. pusillum*, metamorphoses, p. 58; LINDEMAN, Bull. Mosc. 1888. *O. sabulosum*, L., var. *distinctum*, Villa, = (*grenieri*, Perris, and *melitense*, Kust.); HEYDEN, Wien. ent. Z. vii, p. 216.

Hopatrum octocostatum, Tonkin, FAIRMAIRE, p. 355, Ann. Soc. Ent. Fr. (6) viii; *H. insulanum*, Norfolk I., OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 1006; *H. strangulatum*, p. 128, *hadroide*, p. 129, Pekin, FAIRMAIRE, Rev. d'Ent. vii : n. spp.

Opatroides (*Penthicus*) *cribellatus*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 127, n. sp.

Cyptus minor, Congo, FAIRMAIRE, Notes Leyd. Mus. x, p. 264, n. sp.

Trachyscelides, Diaperides, Ulomides.

Scymena, Pasc., characters of the genus; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 269.

S. australis, Port Lincoln, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 270, n. sp.

Platydemia fossulata, Port Lincoln, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 273, n. sp.

Ulomoides, n. g., near *U. humeralis*, n. sp., Australia; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 274.

Lindia, n. g., near *Hypophleus*, for *L. angusta*, n. sp., Australia; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 275.

Hypophleus: *Nemosoma fasciatum*, Fairm., is a *Tenebrionide* near this; LÉVEILLÉ, p. ccvii, Bull. Soc. Ent. Fr. (6) viii.

Toxicum curicorne, apretum, Australia, BLACKBURN, p. 276, Tr. R. Soc. S. Austr. x, n. spp.

Helæides, Cossyphides.

Pterohelorus insignis, p. 277, *ater*, p. 279, *ovalis*, p. 281, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, n. spp.

Helorus, the generic characters, p. 635; the species described, pp. 636-651: MACLEAY, P. Linn. Soc. N.S.W. (2) ii.

H. brevicostatus, p. 865, *horridus*, p. 866, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii; *H. interioris*, p. 639, *pallidus*, p. 640, *derbyensis*, p. 648, Australia, MACLEAY, P. Linn. Soc. N.S.W. (2) ii : n. spp.

Saragus: characters of, p. 653; divided into three sections, p. 654; MACLEAY, P. Linn. Soc. N.S.W. (2) ii.

S. convexicollis, *blackburni*, p. 656, *catenulatus*, p. 658, *rudis*, *lericostatus*, p. 659, *apicipennis*, p. 661, *clathratus*, *crenulatus*, p. 663, *rugosipennis*, p. 664, *striatipennis*, *geminatus*, p. 668, *pascœi*, p. 669, *brunnipennis*, p. 670, *heris*, p. 671, Australia, MACLEAY, P. Linn. Soc. N.S.W. (2) ii; *S. inaequalis*, p. 867, *lindi*, p. 868, *latus*, p. 869, *mediocris*, p. 870, *macleayi*, p. 871, *satelles*, p. 872, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Saragodinus tuberculatus, Australia, BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 873, n. sp.

Endustomus parallelogrammus, Africa, FAIRMAIRE, Notes Leyd. Mus. x, p. 265, n. sp.

Tenebrionides, Heterotarsides, Onodalonides.

Nyctobates barbereti, I. of Tchouan, FAIRMAIRE, p. 27, Ann. Ent. Belg. xxxii; *N. inequalis*, Tonkin, FAIRMAIRE, p. 358, Ann. Soc. Ent. Fr. (6) viii: n. spp.

Eucyalenthus foveoseriatus, Cambodia, FAIRMAIRE, p. 358, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Derosphærus subcostulatus, Cochinchina, FAIRMAIRE, p. 356, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Derostrophus, n. n. for *Derosphærius*, Westw., p. 186, with *D. castaneorufus*, *xanthopus*, p. 187, *rugifrons*, *stricticollis*, p. 188, *seriepunctatus*, p. 189, n. spp., S. Africa; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii.

Afrinus, n. g., p. 189, for *A. striolifrons*, *grandicornis*, *furcillabris*, n. spp., S. Africa; FAIRMAIRE, p. 190, Ann. Soc. Ent. Fr. (6) viii.

Meneristes (sub *Tenebrio*) *australis*, Boisd., = (*laticollis*, Boisd.); BLACKBURN, Tr. R. Soc. S. Austr. x, p. 282.

Catapiestus crenulicollis, Cambodia, FAIRMAIRE, p. 357, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Elazetu, n. g., near *Ædiatorix*, p. 358, for *E. æneicolor*, n. sp., Tonkin, p. 359; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii.

Heterotarsus pustulifer, Tonkin, FAIRMAIRE, p. 361, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Pseudolyptus belonii, E. India, FAIRMAIRE, p. cxxxii, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Eucyrtus corinthius, Tonkin, p. 359, *infimus*, Hué, p. 360, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Pseudeumolpus seriatoporus, Tonkin, FAIRMAIRE, p. 361, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Callimaria, n. g., near *Pseudocamaria*, for *C. impressipennis*, n. sp., Madagascar; FAIRMAIRE, Le Nat. (2) ii, p. 12, fig. 4.

Helopides, Megacanthides, Amarygmides.

Stenomax æneipennis, Circassia, REITTER, Wien. ent. Z. vii, p. 212, n. sp.

Helops pekinensis, China, FAIRMAIRE, Rev. d'Ent. vii, p. 130; *H. (Lamperos) asperipennis*, Tonkin, FAIRMAIRE, p. 362, Ann. Soc. Ent. Fr. (6) viii: n. spp.

Hydromedion variegatum, Waterh., figured, pl. ii, fig. 1, and described, p. 45, FAIRMAIRE, Miss. Sci. Cap Horn, vi.

Parahelops pubescens, fig. 2, *angulicollis*, fig. 3, *haverei*, fig. 4, figured, pl. ii, and described, pp. 49-52; FAIRMAIRE, Miss. Sci. Cap Horn, vi.

Brachyhelops hahni, figured and redescribed; FAIRMAIRE, Miss. Sci. Cap Horn, vi, p. 53, pl. ii, fig. 5.

Astenochirus plicatulus, Transvaal, FAIRMAIRE, Tr. S. African Phil. Soc. iv, p. 198, n. sp.

Amarygmus cupreofossus, Tonkin, FAIRMAIRE, p. 362, Ann. Soc. Ent. Fr. (6) viii; *A. tricolor*, Sumatra, *id.* p. cxc, Bull. Soc. Ent. Fr. (6) viii: n. spp.

Plesiophthalmus armicrus, Tonkin, FAIRMAIRE, p. 363, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Strongyliides.

Strongylium conicicollis, Mäkl., pl. xiv, fig. 25, *cribripes*, fig. 24, *gerstaeckeri*, fig. 22 (variation noticed, p. 357), *eminens*, Mäkl., fig. 21, *auratum*, Cast., pl. xvi, fig. 2, *aulicum*, Mäkl., pl. xv, fig. 17, *decoratum*, fig. 18, *cinctum*, fig. 24, *marginale*, fig. 25, *suturale*, pl. xvi, fig. 5, *raiosum*, fig. 7, *blandum*, fig. 8, *impressicollis*, fig. 9, variation noticed, p. 370, *armatum*, fig. 10, characters noticed, p. 371, *subcostatum*, fig. 15, noticed, p. 375, *apicicorne*, Mäkl., fig. 16, figured; CHAMPION, Biol. Centr. Am. Col. iv (1).

S. sulcipectus, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 185; *S. morosum*, p. 363, *serricorne*, p. 364, Cochín China, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii; *S. costaricense*, pl. xv, fig. 10, p. 353, *colombianum*, Panama, fig. 11, p. 354, *langurioides*, Nicaragua, fig. 12, p. 355, *centrale*, pl. xvi, fig. 1, p. 356, *frontale*, pl. xv, fig. 13, p. 357, Panama, *belli*, Nicaragua, p. 358, *viriditinctum*, Guatemala, pl. xvi, fig. 4, p. 359, *atrum*, pl. xv, fig. 14, p. 360, *opacipenne*, fig. 15, *bivittatum*, fig. 16, p. 361, Mexico, *panamense*, fig. 19, p. 363, Panama, *nitidiceps*, fig. 20, p. 364, *varians*, fig. 21, p. 365, *misanthæ*, fig. 23, p. 367, *curticorne*, pl. xvi, fig. 6, p. 363, Mexico, *oculatum*, p. 371, *brevipes*, fig. 11, p. 372, Centr. America, *gregarium*, fig. 12, Panama, *erraticum*, Nicaragua, p. 373, *carinipenne*, fig. 13, Panama, p. 374, *punctipes*, fig. 14, Guatemala, p. 375, *fragile*, fig. 17, Panama, p. 377, CHAMPION, Biol. Centr. Am. Col. iv (1) : n. spp.

Otocerus dilaticornis, pl. xvi, fig. 18, Panama, *torolæ*, fig. 19, Guatemala, p. 378, *nicaraguensis*, fig. 20, Chontales, p. 379, *interruptus*, fig. 21, Panama, p. 380, *hamatus*, fig. 22, *microps*, fig. 23, Nicaragua, p. 381, *impressipennis*, fig. 24, Panama, p. 382, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Pseudotocerus, n. g., for *P. attenuatus*, n. sp., Nicaragua, pl. xvi, fig. 25, and including *Stenochia longipes*, Lucas; CHAMPION, p. 383, Biol. Centr. Am. Col. iv (1).

Aspidosternum violaceum, Congo, FAIRMAIRE, Note⁴ Leyd. Mus. x, p. 266, n. sp.

Chanopterus, Boh., referred to *Pythidae* or *Melandryidae*; HORN, Ent. Am. iv, p. 48.

Egialitide.

Egialites, Mann, trophi of; HORN, Tr. Am. Ent. Soc. xv, p. 27, pl. m, fig. 23.

CISTELIDE.

[C. CHAMPION (319), FAIRMAIRE (241, 244), QUEDENFELDT (694), SCHAUFUSS (795).]

New genus in amber; see Paleo-entomology, p. 79.

CHAMPION tabulates the Central American genera, pp. 386 & 387, and in describing the species figures in many cases the male secondary sexual organs; Biol. Centr. Am. Col. iv (1).

Cylindrothorus, Sol., belongs to *Cistelides* and = (*Othelecta*, Paso.); FAIRMAIRE, p. 196, Ann. Soc. Ent. Fr. (6) viii.

C. bohemanii, Lake N'Gami, FAIRMAIRE, p. 196, Ann. Soc. Ent. Fr. (6) viii; *C. rufulus*, Africa, *id.*, Notes Leyd. Mus. x, p. 267 : n. spp.

Dyagenes subscabrosa, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 186, n. sp.

Lobopoda gigantea, pl. xvii, fig. 1, Mexico, p. 388, *grandis*, Nicaragua, p. 389, *asperula*, fig. 2, Mexico, *acutangula*, fig. 3, Centr. America, p. 390 *tristis*, Panama, fig. 4, p. 391, *mexicana*, fig. 5, Mexico, *panamensis*, fig. 6, p. 392, *mucronata*, fig. 7, Panama, *apicalis*, fig. 8, Guatemala, p. 393, *atrata*, fig. 9, Nicaragua, *subparallela*, fig. 10, p. 394, *seriata*, fig. 11, *convexicollis*, fig. 12, p. 395, *oblonga*, fig. 13, Mexico, *puncticollis*, fig. 14, Guatemala, p. 396, *yucatanica*, fig. 15, *attenuata*, fig. 16, Centr. America, p. 397, *tropicalis*, fig. 17, Panama, *femoralis*, fig. 18, Centr. America, p. 398, *chontalensis*, Nicaragua, *simplex*, fig. 22, Brit. Honduras, p. 399, *opaca*, fig. 23, Panama, *opacicollis*, Centr. America, *hirta*, Nicaragua, p. 400, *sculpturata*, fig. 20, Panama, *levis-collis*, fig. 21, p. 401, *proxima*, pl. xviii, fig. 1, *jalapensis*, fig. 2, p. 402, *parcula*, fig. 3, Mexico, *minuta*, fig. 4, *tenuicornis*, fig. 5, p. 403, Panama, *viridis*, fig. 6, Centr. America, p. 404, *foveata*, fig. 7, *æneotincta*, Panama, *pilosa*, Mexico, p. 405, *nitens*, fig. 8, *irazuensis*, fig. 9, Costa Rica, p. 406, *nitida*, *viridipennis*, fig. 10, p. 407, *æneipennis*, fig. 11, *cariniventris*, p. 408, Panama, *obsoleta*, fig. 13, Mexico, *glabrata*, fig. 14, Panama, p. 409, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Temnes, n. g., for *T. cæruleus*, n. sp., Panama, pl. xviii, fig. 15, CHAMPION, p. 410, Biol. Centr. Am. Col. iv (1).

Allecula cruralis, Africa, FAIRMAIRE, Notes Leyd. Mus. x, p. 267; *A. (Dietopsis) longipennis*, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 186; *A. castaneipennis*, pl. xviii, fig. 16, Centr. and S. America, *rugicollis*, fig. 17, Mexico, p. 412, *verapacis*, fig. 18, *feror*, fig. 19, Guatemala, p. 413, *gaumeri*, fig. 20, *pilipes*, fig. 21, Mexico, *belti*, fig. 22, Nicaragua, p. 414, *depressa*, pl. xix, fig. 1, *opacipennis*, fig. 2, p. 415, *angustata*, fig. 3, *laticeps*, fig. 4, p. 416, Mexico, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Alethia, n. g., p. 417, for the following n. spp., from Mexico : *sallæi*, pl. xix, fig. 5, p. 417, *longipennis*, fig. 6, *subnitida*, fig. 7, *azteca*, fig. 8, p. 418, *lepturoides*, fig. 9, *funerea*, p. 419, *hügei*, fig. 10, p. 420; CHAMPION, Biol. Centr. Am. Col. iv (1).

Theatetes, n. g., for *T. basicornis*, n. sp., Mexico, pl. xix, fig. 11; CHAMPION, p. 420, Biol. Centr. Am. Col. iv (1).

Charisius, n. g., p. 421, for the following n. spp. from Mexico and Guatemala : *fasciatus*, pl. xix, figs. 12 & 13, p. 421, *zunilensis*, fig. 14, *interstitialis*, p. 422, *salvini*, fig. 15, p. 423; CHAMPION, Biol. Centr. Am. Col. iv (1).

Narses, n. g., p. 423, for *N. subalatus*, n. sp., Guatemala, pl. xix, fig. 15, p. 424; CHAMPION, Biol. Centr. Am. Col. iv (1).

Hymenurus occidentalis, pl. xix, fig. 17, N. America and Mexico, p. 425, *brevicornis*, fig. 18, *durangoensis*, Mexico, *tursalis*, fig. 19, Guatemala, p. 426, *oculatus*, fig. 20, *sordidus*, fig. 22, Mexico and Guatemala, p. 427, *pini*, fig. 21, Guatemala, *canaliculatus*, p. 428, *flöhri*, fig. 23, *laticollis*,

Mexico, *grandicollis*, N. America and Mexico, p. 429, *seguis*, Mexico, *tibialis*, fig. 24, Guatemala, p. 430, *hispidulus*, pl. xx, fig. 1, *forreri*, Mexico, p. 431, *foveiventris*, fig. 2, Guatemala, *similis*, fig. 5, p. 432, *badius*, fig. 6, *rufescens*, p. 433, *igualensis*, *longicollis*, fig. 3, *castaneus*, p. 434, *depressus*, *colonoides*, fig. 4, *brevipes*, fig. 7, p. 435, *torridus*, Mexico, *angustatus*, *emmenastoides*, p. 436, *maritimus*, Guatemala, p. 437, *americanus*, Centr. America, *ruficollis*, fig. 8, Mexico, p. 438, *guatemalensis*, fig. 9, Guatemala, *pallidus*, p. 439, *villosus*, fig. 10, *parvicollis*, *deplanatus*, fig. 11, p. 440, *corticarioides*, p. 441, Mexico, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Polyidus, n. g., p. 441, for *P. meridionalis*, n. sp., Mexico and Guatemala, pl. xx, fig. 13, p. 442; CHAMPION, Biol. Centr. Am. Col. iv (1).

Menes, n. g., for *M. meridanus*, pl. xx, fig. 12, p. 442, *rotundatus*, p. 443, n. spp., Mexico; CHAMPION, Biol. Centr. Am. Col. iv (1).

Menaceus, n. g., p. 443, for *M. crassicornis*, pl. xx, fig. 14, *aqualis*, fig. 15, Mexico, *texanus*, Texas, n. spp., p. 444; CHAMPION, Biol. Centr. Am. Col. iv (1).

Diopæus, n. g., for *D. compressicornis*, n. sp., Mexico, pl. xx, fig. 16; CHAMPION, p. 445, Biol. Centr. Am. Col. iv (1).

Pitholaus, n. g., for *P. helopioides*, n. sp., Guatemala, pl. xx, fig. 17; CHAMPION, p. 446, Biol. Centr. Am. Col. iv (1).

Phedius, n. g. for the following n. spp.: *P. chevrolati*, p. 447, pl. xx, fig. 18, *carbonarius*, fig. 19, *hidalgoensis*, p. 448, *cylindricollis*, fig. 20, *obovatus*, p. 449, *mexicanus*, *funestus*, p. 450, Mexico; CHAMPION, Biol. Centr. Am. Col. iv (1).

Telesicles, n. g., p. 450, for *T. cordatus*, n. sp., Mexico, pl. xx, fig. 21, p. 451; CHAMPION, Biol. Centr. Am. Col. iv (1).

Cistela nigricornis, Centr. America, pl. xx, fig. 22, *zunilensis*, p. 452, *cinerascens*, Mexico, *calida*, p. 453, *decepta*, fig. 23, *chiriquensis*, fig. 24, Panama, p. 454, *delitescens*, fig. 25, *occulta*, fig. 26, p. 455, Guatemala, *juquila*, *alternans*, pl. xxi, fig. 1, Mexico, p. 456, *fragilicornis*, fig. 2, Guatemala, p. 457, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Gonodera macrophthalma, note on; REITTER, p. 212, Wien. ent. Z. vii.

Isomira obsoleta, pl. xxi, fig. 3, p. 457, *subænea*, fig. 4, Mexico, *eranesceus*, Guatemala, p. 458, *brevicollis*, Mexico, p. 459, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Myctochares quadrimaculata, n. var., *schwarzi*; REITTER, Deutsche e. Z. xxxii, p. 431.

Ctenopus gracillimus, Congo, FAIRMAIRE, Notes Leyd. Mus. x, p. 268, n. sp.

Erzias, n. g., for *E. violaceipennis*, pl. xxi, fig. 5, Nicaragua, *bicolor*, Panama, n. spp.; CHAMPION, p. 460, Biol. Centr. Am. Col. iv (1).

Prostenus panamensis, Bugaba, pl. xxi, fig. 6, CHAMPION, p. 461, Biol. Centr. Am. Col. iv (1), n. sp.

Lystronychus piliferus, N. to S. America, pl. xxi, fig. 7, p. 462, *purpurcispennis*, fig. 8, Guatemala, *scapularis*, fig. 9, Centr. America, p. 463, CHAMPION, Biol. Centr. Am. Col. iv. (1), n. spp.

Xystropus fulgidus, pl. xxi, fig. 10, *fallax*, fig. 11, *lbasi*, Müll., fig. 12, figured; Biol. Centr. Am. Col. iv (1).

Cteisa pedinoides, Mäkl., figured, pl. xxi, fig. 13; Biol. Centr. Am. Col. iv (1).

OTHNIIDÆ and NILIONIDÆ.

[Cf. CHAMPION (319), HORN (394).]

Othnius, generic characters, p. 27, sexual characters, p. 28, pl. iii, fig. 24; *guttulatus*, Lec., is merely a name, l. c.: HORN, Tr. Am. Ent. Soc. xv. *O. mexicanus*, figured, pl. xxi, fig. 18; CHAMPION, Biol. Centr. Am. Col. iv (1).

O. senecionis, pl. xxi, fig. 14, *antennalis*, fig. 15, p. 467, Mexico, *multiguttatus*, fig. 16, *intricatus*, fig. 17, Guatemala, p. 468, *sticticopterus*, fig. 19, Mexico, p. 469, CHAMPION, Biol. Centr. Am. Col. iv (1), n. spp.

Nilio fulvopilosus, *thomsoni*, pl. xxi, fig. 20, *chiriquensis*, fig. xxi, Centr. America, CHAMPION, p. 471, Biol. Centr. Am. Col. iv (1) n. spp.

PYTHIDÆ.

[Cf. HORN (394), LEWIS (509), REITTER (727).]

Trimitomerus, n. g., p. 44, for *T. riversii*, n. sp., Arizona, p. 45; HORN, Tr. Am. Ent. Soc. xv.

Pytho, characters of the N. American species; HORN, Tr. Am. Ent. Soc. xv, pp. 45 & 46.

P. nivalis, Japan, LEWIS, Ent. xxi, p. 109, n. sp.

Salpingus leleri, Circassia, REITTER, p. 213, Wien. ent. Z. vii, n. sp.

MELANDRYIDÆ.

[Cf. BLACKBURN (77), HORN (394), REITTER (727).]

Arrangement of discussed, and ten subdivisions proposed; HORN, Tr. Am. Ent. Soc. xv, pp. 43 & 44.

Eustrophus repandus, p. 33, *arizonensis*, p. 34, N. America, HORN, Tr. Am. Ent. Soc. xv, n. spp.

Holostrophus, n. g., p. 36, for *Eustrophus impressicollis*, Lec., *bifasciatus*, Say, and *H. discolor*, n. sp., Virginia, p. 37; HORN, Tr. Am. Ent. Soc. xv.

Hypulus, *Dircæa*, *Serropalpus*, and *Mystaxus*, synonymy of discussed; HORN, Tr. Am. Ent. Soc. xv, p. 39. *H.* (sub *Phlocetrya*) *vaudoueri*, Muls., = *Dircæa fusca*, Lec.; HORN, l. c. p. 41.

Hypulus bicinctus, p. 40, California, HORN, Tr. Am. Ent. Soc. xv, p. 39, n. sp.

Mallodrya, n. g., for *M. subænea*, n. sp., Ohio, HORN, p. 42, Tr. Am. Ent. Soc. xv.

Orchesia, *kumberskyi*, Circassia (with var. *fuscofasciata*), REITTER, Wien. ent. Z. vii, n. sp.

Temnopalpus, n. g., for *T. bicolor*, n. sp., Port Lincoln; BLACKBURN, p. 283, Tr. R. Soc. S. Austr. x.

LAGRIIDÆ.

[Cf. FAIRMAIRE (243, 252), HORN (394), QUEDENFELDT (694).]

Lagriidæ of N. America revised; HORN, Tr. Am. Ent. Soc. xv, pp. 28-32.

Lagria rubida, Graells, = (*brevipilis*, Desbr.) ; BEDEL, p. 286, Ann. Soc. Ent. Fr. (6) viii.

L. foreicollis, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 187 ; *L. ampla*, Madagascar, FAIRMAIRE, Le Nat. (2) 1, p. 71, fig. 4 : n. spp.

Porrolagria ferruginea, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 188, n. sp.

Statira pluripunctata, p. 29, *opacicollis*, p. 30, *basalis*, p. 31, N. America, HORN, Tr. Am. Ent. Soc. xv, n. spp.

Lophophyllus, n. g., for *L. costipennis*, n. sp., Madagascar, fig. 5, FAIRMAIRE, Le Nat. (2) i, p. 71.

Casnonidea terminata, Tonkin, *atricapilla*, Celebes, FAIRMAIRE, p. 365, Ann. Soc. Ent. Fr. (6) viii, n. spp.

PEDILIDÆ, ANTHICIDÆ, PYROCHROIDÆ.

[Cf. COSTA (164), HORN (394), REITTER (724).]

Xylophilus (*Olotelus*) *atomus*, Sardinia, COSTA, Atti Acc. Nap. (2) i, No. 13, p. 13, n. sp.

Laferte's collection of *Anthicidæ*, acquired by OBERTHUR, Bull. Soc. Ent. Fr. (6) viii, p. cliv.

Notozus serridens, Marocco, *semipunctatus*, Turkesian, REITTER, Deutsche e. Z. xxxii, p. 431, n. spp.

Dendroides : characters of the N. American species ; HORN, Tr. Am. Ent. Soc. xv, pp. 46-48.

MORDELLIDÆ, RHIPIDOPHORIDÆ.

Tomoxia bidentata and *lineella* queried as sexes of one species ; LINELL, Ent. Am. iii, p. 171.

Mordellistena splendens, habits of ; SCHWARZ, P. E. Soc. Wash. i, p. 106.

Anaspis : ♂ characters of *A. rufa* ; SCHWARZ, P. E. Soc. Wash. i, p. 76.

Rhipiphorus paradoxus, mode of finding in nest of *Vespa vulgaris* ; DELABY, Bull. Soc. L. Nord France, vii, pp. 198-204.

CANTHARIDÆ.

[Cf. FAIRMAIRE (241, 243, 244), HEYDEN (373), OLIVIER (639), PÉRINGUEY (667).]

Meloe : note on the synonymy of various European species and varieties : ESCHERICH, Wien. ent. Z. vii, pp. 241 & 242 ; notes on habits : CLERK, Soc. Ent. iii, p. 115, CERRA, *t. c.* p. 122. *M. violaceus*, formation of egg ; LEYDIG (512). *M. proscarabous*, embryology of ; NUSBAUM (628).

M. concordi, Alai Mountains HEYDEN, Deutsche e. Z. xxxii, p. 42, n. sp.

Horia cephalogoma, Congo, FAIRMAIRE, Notes Leyd. Mus. x, p. 269 ; *H. hottentota*, S. Africa, PÉRINGUEY, p. 134, Tr. S. African Phil. Soc. iv : n. spp.

Mylabris hannuata, S. Africa, FAIRMAIRE, p. 198, Ann. Soc. Ent. Fr. (6) viii ; *M. laccrata*, p. 129, pl. iii, fig. 11, *gariopina*, fig. 10, p. 130, *M.*

(*Ceroctis*) *korana*, fig. 9, *distincta*, p. 131, *M. (Decatoma) udamantina*, fig. 7, *contorta*, fig. 5, p. 132, *M. (Coryna) apicalis*, p. 133, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv : n. spp.

Eletica wahlbergi and *verticalis* are one species; PÉRINGUEY, Tr. S. African Phil. Soc. iv, p. 135.

E. posticalis, p. 135, *nigriceps*, *cardinalis*, p. 136, *mærens*, p. 137, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, n. spp.

Cantharis vesicatoria, digestion; BEAUREGARD (48). *Lytta vesicatoria*, L., var., = (*flavovittata*, Bull.) ; REITTER, Wien. ent. Z. vii, p. 133.

Cantharis metasternalis, p. 269, *luminicornis*, p. 270, Africa, FAIRMAIRE, Notes Leyd. Mus. x ; *Lytta tibetana*, Thibet, OLIVIER, p. lvi, Bull. Soc. Ent. Fr. (6) viii ; *L. jucunda*, p. 137, *notaticollis*, p. 138, *linolata*, *lugubris*, p. 139, *albolineata*, *mesembryanthemi*, p. 140, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv : n. spp.

Zonitis geniculata, Congo, FAIRMAIRE, Notes Leyd. Mus. x, p. 271 ; *Z. dollei*, Tonkin, *id.* p. 366, Ann. Soc. Ent. Fr. (6) viii ; *Z. apicalis*, *cribraria*, p. 142, *flavipennis*, *ruficeps*, p. 143, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv : n. spp.

Sitaris capensis, *notaticollis*, S. Africa, PÉRINGUEY, p. 141, Tr. S. African Phil. Soc. iv, n. spp.

CEDEMERIDÆ.

[Cf. FAIRMAIRE (242), MARSEUL (553).]

Sparedrus davidis, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 131, n. sp.

Ceclamera podagrarica, *incerta*, and *sericans*, Muls., synonymical note ; HEYDEN, Wien. ent. Z. vii, p. 216.

Ce. analis, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 131, n. sp.

CURCULIONIDÆ.

[Cf. ANDRÉ (7), AURIVILLIUS (33), BEDEL (53), CASEY (137), DESBROCHERS (181), EPPELSHEIM (631), FAIRMAIRE (238, 239, 242, 243, 244, 251), FAUST (259, 260, 373, 377), FAUVEL (261), FISCHER (275, 276), JACQUET (414, 415), KRAATZ (467), OLLIFF (634), ORMAY (643), PASCOE (659), PÉRINGUEY (664, 667, 668), QUEDENFELDT (694, 695), REITTER (724, 727, 729), SIMMONS (843), STIERLIN (631, 871, 872, 873, 875, 876), THOMSON (883).]

Brachyderides, *Otiorthynchides*, *Leptopsides*.

Blosyrus tuberculipennis, p. 144, *fusciculosus*, p. 145, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv ; *B. cænicollis*, p. 272, *callonicollis*, *ovatus*, p. 273, *signaticollis*, p. 274, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii : n. spp.

Maes, n. g., near *Blosyrus*, p. 28, for *M. transversicollis*, n. sp., Yunnan, p. 29 ; FAIRMAIRE, Ann. Ent. Belg. xxxii.

Holonychus viridilineatus, Madagascar, FAIRMAIRE, Le Nat. (2) ii, p. 32, fig. 3, n. sp.

Dactylorhinus tristis, Spain, STIERLIN, p. 16, MT. schw. ent. Ges. viii, n. sp.

Antaretobius hyadesi, p. 55, pl. ii, fig. 6, *lucinosus*, p. 56, fig. 8, *dissimilis*, p. 57, fig. 7, figured and redescribed.

Neliocarus danieli, Pyrenees, STIERLIN, p. 15, MT. schw. ent. Ges. viii; *N. stussineri*, Thessaly, *id. t. c.* p. 53 : n. spp.

Strophosomus denticollis, Centr. Africa, QUEDENFELDT, B. E. Z. xxxiii, p. 275, pl. vi, fig. 1, n. sp.

Sciaphilus pallidesquamosus, Beyrout, STIERLIN, p. 55, MT. schw. ent. Ges. viii, n. sp.

Foucartia schwarzi, Corfu, REITTER, Wien. ent. Z. vii, p. 71, n. sp.

Stamoderes, n. g. (*Brachyderini*), p. 236, for *S. uniformis*, n. sp., California, p. 237; CASEY, Ann. N. York Ac. iv.

Sitones: revision of the N. American species; CASEY, Ann. N. York Ac. iv, pp. 279-296. *S. lividipes*, Fahr., = (*hipponensis*, Desb.); *S. virgatus*, Fahr., = (*argentellus*, Desb.); BEDEL, Ann. Soc. Ent. Fr. (6) viii, pp. 286 & 287. *S. cylindricollis* n. var. *molitor*; FAUST, Deutsche e. Z. xxxii, p. 44.

S. extrusus, p. 282, *varians*, p. 283, *margaritosus*, *procerus*, p. 284, *occidentalis*, p. 285, *eximius*, p. 286, *montanus*, p. 287, *nebulosus*, *alternans*, p. 288, *sordidus*, p. 289, *osculans*, p. 290, *prominens*, p. 291, *hispidiceps*, *angustulus*, p. 292, *explicitus*, p. 293, *apacheanus*, p. 294, *sparsus*, p. 295, N. America, CASEY, Ann. N. York Ac. iv, n. spp.

Ischnotrachelus viridipallens, p. 276, *elongatus*, p. 277, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, n. spp.

Chærodrys korbi, Amasia, STIERLIN, p. 55, MT. schw. ent. Ges. viii, n. sp.

Conocetus gracilis, Greece, STIERLIN, MT. schw. ent. Ges. viii, p. 14; *C. femoratus*, Greece, *id. t. c.* p. 56 : n. spp.

Polydrosus (Metallites) atomarius, Ol., metamorphoses; HACKER, Wien. ent. Z. vii, p. 52.

P. villosus, Spain, STIERLIN, p. 14, MT. schw. ent. Ges. viii; *P. (Eustolus) virginialis*, Alai mountains, FAUST, Deutsche e. Z. xxxii, p. 43; *P. (E.) ponticus*, Amasia, *id. t. c.* p. 46; *P. (E.) starcki*, Circassia, REITTER, Wien. ent. Z. vii, p. 261 : n. spp.

Thylacites alaiensis, Alai mountains, FAUST, Deutsche e. Z. xxxii, p. 42, n. sp.

Piazomias tristiculus, Yunnan, FAIRMAIRE, p. 29, Ann. Ent. Belg. xxxii; *P. parumstriatus*, *breriusculus*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 132 : n. spp.

Elissa, n. g. (*Tanymericini*), p. 271, for *E. laticeps*, Texas, *constricta*, Arizona, n. spp., p. 272; CASEY, Ann. N. York Ac. iv.

Pseudelissa, n. g., p. 273, for *P. cinerea*, n. sp., Texas, p. 274; CASEY, Ann. N. York Ac. iv.

Eutinopus mus, Tschifu, FAUST, S. E. Z. p. 285; *E. pallidosparsus*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 135 : n. spp.

Heteromias tibetanus, Thibet, FAUST, S. E. Z. xlix, p. 285, n. sp.

Hypomeces confusus, China, FAIRMAIRE, p. 29, Ann. Ent. Belg. xxxii, n. sp.

Siderodactylus armatipes, p. 145, *simplicipes*, *humeralis*, p. 146, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, n. spp.

Anosius, n. g., near *Iphisomus*, for *O. angustulus*, n. sp., S. Africa, FAIRMAIRE, p. 199, Ann. Soc. Ent. Fr. (6) viii.

Dermatodes griseascens, viriditinctus, Yunnan, FAIRMAIRE, p. 30, Ann. Ent. Belg. xxxii, u. spp.

Ischnomius nobilis, Faust, figured, pl. vi, fig. 2, noticed, p. 279; QUEDENFELDT, B. E. Z. xxxii.

Orophopsis, n. g. (*Cyphidæ*), p. 279, for *O. fausti*, n. sp., Centr. Africa, p. 280, pl. vi, fig. 3; QUEDENFELDT, B. E. Z. xxxii.

Eupholus cinnamomus, New Guinea, PASCOE, p. 410, Ann. N. H. (6) ii, n. sp.

Epicerus texanus, sulcatus, N. America, CASEY, Ann. N. York Ac. iv, p. 235, n. spp.

Pachyrrhynchus, remarks on Behrens' paper; species of the *gemmatus* group, discussed; KRAATZ, Deutsche e. Z. xxxii, pp. 25-32. *P. chevrolati*, Eyd., = (*chlorolineatus*, Waterh.); BAER, p. cxvii, Bull. Soc. Ent. Fr. (6) viii.

P. immarginatus, p. 28, *cærulans*, p. 29, *flavopunctatus*, p. 30, *purpureus*, p. 31, Philippines, KRAATZ, Deutsche e. Z. xxxii, n. spp.

Diatmetus, Gerst., = (*Dicasticus*, Pasc.); FAIRMAIRE, p. clxxv, Bull. Soc. Ent. Fr. (6) viii.

Otiorynchus picipes, metamorphoses; ANDRÉ (7). *O. aurosquamulatus*, Ret., redescribed, p. 232, *brachialis*, Boh., n. var. *dentitibia*, p. 234; REITTER, Wien. ent. Z. vii. *O. tenebriocosus* and *fuscipes*, note on; SCHILSKY, Deutsche e. Z. xxxii, p. 127. *O. bicostratus* and *gemellatus*, characters of; STIERLIN, Deutsche e. Z. xxxii, p. 79. *O. concinnus*, n. var. *steppensis*; FAUST, Hor. Ent. Ross. xxii, p. 147.

O. subnudus, Greece, STIERLIN, Deutsche e. Z. xxxii, p. 80; *O. brusinae*, Croatia, p. 9, *ormayi*, Austria, p. 10, *italicus*, *cornutus*, Italy, p. 11, STIERLIN, MT. schw. ent. Ges. viii; *O. longiusculus*, Spain, p. 49, *rhilensis*, Rhilo Dagh, *punctifrons*, Steiermark, p. 50, *rugosogranulatus*, Bosnia, *ganglbaueri*, Roumelia, p. 51, *bosnicus*, Bosnia, p. 52, STIERLIN, t. c.; *O. infensus*, Crimea, p. 149, *königi*, West Caucasus, p. 150, *nefandus*, Crimea, p. 151, *O. (Tournieria) sieversi*, Manglis, p. 152, *O. (Aramnichus) venalis*, Dauria, p. 153, *popovi*, Kiachta, p. 154, FAUST, Hor. Ent. Ross. xxii; *O. heinzli*, p. 231, *O. (Tournieria) circassicus*, p. 233, *schamylianus*, p. 234, *kubanensis*, *O. (Aramnichus) abagoensis*, p. 235, *impressiceps*, p. 236, Circassia, REITTER, Wien. ent. Z. vii; *O. (Tournieria) lævipennis*, Crete, p. 373, *magnicollis*, Nikaria, p. 374, *O. (Arammictus) scabripes*, Greece, p. 375, *koracensis*, *carcelloides*, p. 376, *pretiosus*, p. 377, *flavoguttatus*, p. 378, Korax Mountains, *crassicornis*, Island of Samos, p. 378, STIERLIN, Deutsche e. Z. xxxii : n. spp.

Sciopithes significans, p. 255, *brumalis*, p. 256, *arcuatus*, *angustulus*, p. 257, *setosus*, p. 258, California, CASEY, Ann. N. York Ac. iv, n. spp.

Stenoptochus, n. g. (*Otiorynchini*), p. 259, for *S. inconstans*, n. sp., California, p. 260, CASEY, Ann. N. York Ac. iv.

Orthoptochus, n. g., for *O. squamiger*, n. sp., California, p. 261, CASEY, Ann. N. York Ac. iv.

Peritelodes, n. g. (*Otiorynchini*), for *P. oblectus*, n. sp., California; CASEY, Ann. N. York Ac. iv, p. 262.

Peritelinus, n. g., for *P. variegatus*, n. sp., California; CASEY, Ann. N. York Ac. iv, p. 23.

Geoderces puncticollis, California, CASEY, Ann. N. York Ac. iv, p. 264, n. sp.

Geodercodes, n. g. (*Otioryhynchini*), p. 265, for *G. latipennis*, n. sp., California, p. 266; CASEY, Ann. N. York Ac. iv.

Aragnomus hispidulus, California, CASEY, Ann. N. York Ac. iv, p. 266, n. sp.

Thinozenus nevadensis, N. America, CASEY, Ann. N. York Ac. iv, p. 267, n. sp.

Panormus, n. g. (*Otioryhynchini*), p. 269, for *P. setosus*, n. sp., California, p. 270; CASEY, Ann. N. York Ac. iv.

S. luminifer, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 191; *S. quadrispinosus*, p. 281, pl. vi, fig. 4, *angulipennis*, p. 282, pl. vi, fig. 5, Centr. Africa, *id. t. c.* : n. spp.

Cyclomaurus syriacus, Beyrout, STIERLIN, p. 54, MT. schw. ent. Ges. viii, n. sp.

Mylacus seidlitzii, provisional new name for *M. indutus*, Seid. (? *Omis indutus*, Kies.); KRAATZ, Deutsche e. Z. xxxii, p. 333.

M. kruperi, Greece, STIERLIN, MT. schw. ent. Ges. viii, p. 9, n. sp.

Nastus fausti, p. 259, *lederi*, *circassicus*, p. 260, Circassia, REITTER, Wien. ent. Z. vii, n. spp.

Platyomicus tuberosus, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 283; *P. laesipes*, pp. 189 & 283, pl. vi, figs. 6 & 6a, *caricollis*, p. 190, Centr. Africa, *id. t. c.* : n. spp.

Periteli : the North American genera tabulated; CASEY, Ann. N. York Ac. iv, p. 268.

Peritelus juniperi, Sardinia, p. ccv, *grandis*, Sicily, p. ccvi, DESBROCHERS, Bull. Soc. Ent. Fr. (6) viii; *P. sardous*, Sardinia, COSTA, Atti Acc. Nap. (2) i, No. 13, p. 14 : n. spp.

Meira sassariensis, *seidlitzii*, Sardinia, DESBROCHERS, p. ccvi, Bull. Soc. Ent. Fr. (6) viii, n. spp.

Omis indutus, Kies., = (*Holcorhinus metallicus*, Desb.); KRAATZ, Deutsche e. Z. xxxii, p. 333.

O. circassicus, p. 262, *georgicus*, p. 263, Circassia, *mingrelicus*, p. 264, Mingrelia, REITTER, Wien. ent. Z. vii, n. spp.

Barypeithes graecus, Thessaly, STIERLIN, p. 52, MT. schw. ent. Ges. viii, n. sp.

Platytar us kubanensis, Circassia, REITTER, Wien. ent. Z. vii, p. 236, n. sp.

Cathormiocerus socius and *maritimus*, characters of and localities for; CHAMPION & SHARP, Ent. M. M. xxv, pp. 121-123.

C. korbi, Spain, STIERLIN, p. 15, MT. schw. ent. Ges. viii, n. sp.

Pholicodes maculosus, Smyrna, DESBROCHERS, p. ccv, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Phyllobius croaticus, full characters of; STIERLIN, p. 42, MT. schw. ent. Ges. viii. *P. oblongus* n. var. *biformis*; REITTER, p. 238, Wien. ent. Z. vii.

P. saltuarius, Amasia, HEYDEN, Deutsche e. Z. xxxii, p. 46; *P. cir-*

cassicus, p. 237, *mediatus*, p. 238, Circassia, REITTER, Wien. ent. Z. vii ; *P. hungaricus*, Hungary, STIERLIN, Soc. Ent. iii, p. 97 ; *P. kruperi*, Greece, *ophthalmicus*, Croatia, p. 12, *apfelbecki*, Hungary, *fullax*, Greece p. 13, *id.* MT. schw. ent. Ges. viii : n. spp.

Corigetus mandarinus, p. 367, *limbalis*, p. 368, Tonkin, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii : n. spp.

Arhines frenatus, Tonkin, FAIRMAIRE, p. 369, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Heteroptochus obesus, Pekin, FAUST, S. E. Z. xlix, p. 286, n. sp.

Tropiphorus, revision of the genus, FAUVEL, Rev. d'Ent. vii, with *obesus*, p. 162, *cucullatus*, p. 163, Europe, n. spp.

Ophryastes shufeldti, p. 238, *sulcipennis*, p. 239, N. Mexico, CASEY, Ann. N. York Ac. iv, n. spp.

Eupagoderes dunnianus, Texas, CASEY, Ann. N. York Ac. iv, p. 240, n. sp.

Sapotes, n. g. (*Ophryastini*), for *S. puncticollis*, n. sp., Texas, CASEY, Ann. N. York Ac. iv, p. 241.

Amotus, n. g. (*Ophryastini*), p. 243, for *A. longisternus*, p. 244, *gracilior*, p. 245, n. spp., California ; CASEY, Ann. N. York Ac. iv.

Rhigopsis scutellatus, California, CASEY, Ann. N. York Ac. iv, p. 242, n. sp.

Perilaxia perforata, Texas, CASEY, Ann. N. York Ac. iv, p. 245, n. sp.

Amnesia granulata, p. 248, *tesselata*, p. 249, *sculptilis*, p. 250, California, CASEY, Ann. N. York Ac. iv, n. spp.

Nocheles vestitus, Nevada, CASEY, Ann. N. York Ac. iv, p. 251, n. sp.

Miloderes, n. g. (*Ophryastini*), p. 252, for *M. setosus*, n. sp., California, p. 253, CASEY, Ann. N. York Ac. iv.

Brachycerides.

Brachycerus annulatus, Gerst., = (*cinnamomeus*, Pasc.) ; *eckloni*, Gyll., = (*naturalis*, Pasc.) ; *stellaris*, Ol., = (*capito*, Pasc.) ; *oblongus*, Fähr., = (*funstii* and *precursor*, Pasc.) ; *sculpturatus*, Fähr., = (*electilis*, Pasc.) ; PASCOE, P. E. Soc. 1888, p. xxv.

B. kumbanensis, p. 192, *dorsomaculatus*, p. 193, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii ; *B. variipictus*, p. 284, pl. vi, fig. 7, *cincticollis*, *schalovi*, p. 285, *ferrugatus*, p. 286, *carbunculus*, p. 287, Centr. Africa, QUEDENFELDT, t. c. ; *B. maculicollis*, *brachyceropsides*, Natal, PÉRINGUEY, p. 225, Ann. N. H. (6) ii ; *B. madecassus*, Madagascar, p. lxxvii, *lafertei* (Chev.), no locality, p. lxxviii, PÉRINGUEY, C.R. ent. Belg. xxxii ; *B. fluronolatus*, p. 147, pl. iv, fig. 8, *namaqua*, fig. 6, p. 148, *caviceps*, fig. 2, *schonherri*, fig. 5, p. 149, *argutus*, fig. 4, p. 150, *humeralis*, *auritus* (Schön.), fig. 3, p. 151, *amabilis*, p. 152, *karooensis*, p. 153, *transverseforeatus*, *albifuscatus*, fig. 9, p. 154, *varius*, p. 155, *mæstus*, *suturalis*, fig. 1, p. 156, *bullinus* (Schön.), p. 157, *dispar*, *proletarius*, p. 158, *signatus*, p. 159, *boschimanus*, *foveolatus* (Schön.), p. 160, *nanus*, *inops*, p. 161, *ixodicoides*, p. 162, *deceptor*, p. 163, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv : n. spp.

Theates, monograph of the genus, with figures of the species ; AURIVILLIUS, Ent. Tidskr. ix, pp. 149-154, pl. ii.

T. magus, S. Africa, AURIILLIUS, Ent. Tidskr. ix, p. 153, pl. ii, figs. 1-3; *T. cristatus*, p. 163, pl. iii, fig. 14, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv : n. spp.

Byrsopsides.

Hoplitotrachelus foveiceps, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 288, n. sp.

Synthocus parvus, p. 164, *quadripennis*, *wardeni*, pl. iii, fig. 13, p. 165, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, n. spp.

Spartecerus humeralis, p. 166, *bifasciatus*, p. 167, *mendax*, p. 168, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, n. spp.

Minyops planicollis, Greece, STIERLIN, p. 57, MT. schw. ent. Ges. viii, n. sp.

Rhytirhinus kruperi, Greece, STIERLIN, p. 17, MT. schw. ent. Ges. viii, n. sp.

Gronops pygmaeus, Beyrout, STIERLIN, p. 60, MT. schw. ent. Ges. viii, n. sp.

Hipporhinides, Rhyparosomides, Cyllindrorhinides, Molytides.

Cyclomus planicollis, S. Africa, PÉRINGUEY, p. 172, Tr. S. African Phil. Soc. iv, n. sp.

Hipporhinus auricillæ, Transvaal, PÉRINGUEY, p. 171, Tr. S. African Phil. Soc. iv, n. sp.

Eupages verrucellus, S. Africa, PÉRINGUEY, p. 168, Tr. S. African Phil. Soc. iv, n. sp.

Paracerius rugicollis, p. 169, *laticollis*, *tuberculosis*, p. 170, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, n. spp.

Dichotrachelus pygmaeus, Tyrol, STIERLIN, p. 18, MT. schw. ent. Ges. viii, n. sp.

Styphlus kruperi, Balkan, STIERLIN, p. 18, MT. schw. ent. Ges. viii, n. sp.

Adioristus sulcatus, figured and redescribed; FAIRMAIRE, Miss. Sci. Cap Horn, vi, p. 58, pl. ii, fig. 9.

Oryzoma rhyssæ, Norfolk I., OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 1007, n. sp.

Pterotomus, n. g., *Molytidae*, p. 289, for *P. moebiusi*, n. sp., Centr. Africa, p. 290; QUEDENFELDT, B. E. Z. xxxii.

Liosomus hopffgarteni, Transsylvania, STIERLIN, p. 19, MT. schw. ent. Ges. viii, n. sp.

Meloeus carcasicus, Desbr., *grasinus*, Reitt., p. 164, *difficilis* Faust, p. 165, *schneideri*, Tourn., p. 166, characters of; FAUST, Hor. Ent. Ross. xxii.

M. clekesi, Transsylvania, ORMAY, Wien. ent. Z. vii, p. 167; *M. alternans*, Circassia, REITTER, t. c. p. 265; *M. syriacus*, Beyrout, STIERLIN, p. 58, MT. schw. ent. Ges. viii; *M. starcki*, p. 161, *dolosus*, p. 162, Caucasus, *causticus*, Imeretia, p. 163; FAUST, Hor. Ent. Ross. xxii : n. spp.

Trachodes oblongus, *elongatus*, Circassia, REITTER, Wien. ent. Z. vii, p. 266, n. spp.

Scythropides, Hyperides, Diabathrarides.

Eugnathus elegans, Tonkin, FAIRMAIRE, p. 368, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Scythropus lateralis, p. 275, *ferrugineus*, p. 276, *cinereus*, *crassicornis*, p. 277, N. America, CASEY, Ann. N. York Ac. iv, n. spp.

Alophus, the European and Syrian species tabulated; STIERLIN, pp. 64-67, MT. schw. ent. Ges. viii.

A. hebraeus, Syria, p. 67, *asturiensis*, Spain, p. 68, STIERLIN, MT. schw. ent. Ges. viii, n. spp.

Hypera gracilentus, Cap., = (*arcuata*, Desb.); BEDEL, p. xxxvii, Bull. Soc. Ent. Fr. (6) viii.

H. damascena, Damascus, STIERLIN, p. 58, MT. schw. ent. Ges. viii; *H. circassicola*, Circassia, REITTER, Wien. ent. Z. vii, p. 264; *Phytionomus carinicollis*, Austria, STIERLIN, p. 17, MT. schw. ent. Ges. viii: n. spp.

Onychogymnus, n. g. (*Diabathrariidæ*), p. 291, for *O. mechowii*, n. sp., Centr. Africa, p. 292, pl. vi, figs. 9, a-d; QUEDENFELDT, B. E. Z. xxxii.

Oleonides.

Epirrhynchus nigripes, Cape Town, PÉRINGUEY, p. 173, Tr. S. African Phil. Soc. iv, n. sp.

Leucomigus candidatus, Pall. = (*albotesellatus*, Fairm., = *lucasi*, Chev.); BEDEL, p. 287, Ann. Soc. Ent. Fr. (6) viii.

Cleonus raymondi, variation described; COSTA, p. 26, Atti Acc. Napoli (2) ii, No. 8.

C. (Plagiographus) montalbicus, Sardinia, COSTA, Atti Acc. Napoli (2) ii, No. 8, p. 26; *C. quadrimaculatus*, S. Africa, PÉRINGUEY, p. 174, Tr. S. African Phil. Soc. iv; *C. oculiventris*, p. 293, *ovulum*, p. 294, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii; *C. vagesignatus*, Yunnan, FAIRMAIRE, p. 31, Ann. Ent. Belg. xxxii: n. spp.

Tetragonothorax badeni, Madagascar, FAUST, S. E. Z. xlix, p. 288, n. sp.

Lixus macer, habits; RILEY, p. 33, P. E. Soc. Wash. i.

L. perplexus, Crimea, p. 157, *salicorniæ*, Derbent, p. 158, *linnei*, Turkestan, p. 159, *amænus*, Derbent, p. 161, FAUST, Hor. Ent. Ross. xxii; *L. obliquenubilus*, p. 295, *crinipes*, p. 296, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii: n. spp.

Larinus sculpticollis, Yunnan, FAIRMAIRE, p. 31, Ann. Ent. Belg. xxxii, n. sp.

Celostethus syriacus, Beyrout, STIERLIN, p. 59, MT. schw. ent. Ges. viii, n. sp.

Hylobiides, Erirhinides, Amalactides.

Lepyryus ganglbaueri, Caucasus, FAUST, p. 155, Hor. Ent. Ross. xxii, n. sp.

Hylobius pipitzi, New Caledonia, *distinctus*, India, PASCOE, p. 410, Ann. N. H. (6) ii, n. spp.

Endatus helferi, Burma, FAUST, S. E. Z. xlix, p. 292, n. sp.

Nemopteryx, n. g. (*Erirhinidæ*), p. 289, for *N. picus*, n. sp., Philippines, p. 290; FAUST, S. E. Z. xlix.

Bagous compertus, E. India, p. 291, *nymphæa*, Ceylon, p. 292, FAUST, S. E. Z. xlix, n. spp.

Brachybanus pipitzi, Rio Grande do Sul, FAUST, S. E. Z. xlix, p. 293, n. sp.

Emplexis remissa, W. Australia, FAUST, S. E. Z. xlix, p. 294, n. sp.

Smicronyz kubanicus, Novorossisk, REITTER, Wien. ent. Z. vii, p. 267, n. sp.

Ctenomerus: position should be near *Nanophyes*; FAUST, S. E. Z. xlix, p. 298, note.

C. tessellatus, Cape Good Hope, FAUST, S. E. Z. xlix, p. 298, n. sp.

Amalactides, note on the composition of the group; FAUST, S. E. Z. xlix, p. 295, note.

Amalactus carbonarius, Cayenne, FAUST, S. E. Z. xlix, p. 295, n. sp.

Apionides, Cybebides.

Apion dispar, Germ., *hookeri*, Kirb., *sorbi*, F., note on; KRAATZ, Deutsche e. Z. xxxii, pp. 172-174. *A. genista*, note on probable n. spp. mixed with this; DESBROCHERS, p. cxci, Bull. Soc. Ent. Fr. (6) viii.

A. subparallelum, *distinctirostre*, *corsicum*, Corsica, DESBROCHERS, p. cxci, Bull. Soc. Ent. Fr. (6) viii; *A. phocopus*, p. 380, *macrorrhynchum*, p. 381, Greece, EPELSHEIM, Deutsche e. Z. xxxii; *A. irkutense*, Siberia, p. 174, *fissile*, Radde, p. 175, *dauricum*, Dauria, p. 176, FAUST, Hor. Ent. Ross. xxii; *A. humerosum*, Damaraland, PÉRINGUEY, p. 175, Tr. S. African Phil. Soc. iv: n. spp.

Aplemonus, systematic position discussed; FAUST, S. E. Z. xlix, p. 297.

A. aurivillii, Damaraland, FAUST, S. E. Z. xlix, p. 296, n. sp.

Attelubides, Rhinomacerides.

Attelabus atricornis var. *obsidianus*; COSTA, Atti Acc. Napoli (2) ii, No. 8, p. 25.

Apoderus ruficollis, Fab., and other spp., noticed; FAIRMAIRE, Rev. d'Ent. vii, p. 137.

A. miniatus, Transvaal, PÉRINGUEY, p. 176, Tr. S. African Phil. Soc. iv, n. sp.

Auletes empei, Greece, STIERLIN, p. 60, MT. schw. ent. Ges. viii; *A. laticollis*, California, CASEY, Ann. N. York Ac. iv, p. 233: n. spp.

Rhynchites longiceps, Sweden, THOMSON, Opusc. ent. xii, p. 1203; *R. foveipennis*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 136; *R. algaensis*, p. 176, pl. iii, fig. 12, *nigrolimbatus*, p. 177, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv: n. spp.

Magdalinides, Balaninides, Anthonomides.

Fossil presumed Curculionid, allied to *Magdalinus*; KOLBE (452).

Pimelata, n. g. (*Balaninides*), for *P. maculata*, n. sp., India; PASCOE, p. 411, Ann. N. H. (6) ii.

Balaninus hispanus, Spain, STIERLIN, p. 19, MT. schw. ent. Ges. viii, n. sp.

Anthonomus grilati, Bône, DESBROCHERS, p. ccv, Bull. Soc. Ent. Fr. (6)

viii; *A. krugii*, p. 487, *nigro-variegatus*, *annulipes*, p. 488, Porto Rico, FISCHER. B. E. Z. xxxii: n. spp.

Coccotorus scutellaris, oviposition; BRUNER, Ins. Life, i, p. 89, fig. 12.

Bradybatus abeillei, Cyprus, DESBROCHERS, p. ccv, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Orchestes erythropus, Germ. = (*biplagiatus*, Desbr.); BEDEL, and var. *tricolor* = (*flavipes*, Desbr.), p. 287, Ann. Soc. Ent. Fr. (6) viii. *O. fugi*, n. var. *sanguinipennis*; REITTER, p. 271, Wien. ent. Z. vii.

O. ornata, N. America, HORN, Tr. Am. Ent. Soc. xv, p. 38, n. sp.

Trigonocolides, *Coryssomerides*, *Prionomerides*.

Megarrhinus infidus, p. 299, *brachmanæ*, p. 300, Burma, *bifusciatus*, India or., p. 301, *cingulensis*, Ceylon, p. 302, FAUST, S. E. Z. xlix, n. spp.

Lamyus sphadasmoides, Transvaal, PÉRINGUEY, Tr. S. African Phil. Soc. iv, p. 174, n. sp.

Ochryomera fuscata, India or., p. 303, *heteroclyta*, China, p. 304, FAUST, S. E. Z. xlix, n. spp.

Opseoscapa, n. g. (*Prionomerina*), p. 305, for *O. alternans*, n. sp., Malacca, p. 306; FAUST, S. E. Z. xlix.

Odontobarbus, n. g. (*Prionomerina*), p. 307, for *O. hodiernus*, n. sp., Ceylon, p. 308; FAUST, S. E. Z. xlix.

Tychiides, *Cionides*.

Tychius confusus, Desbr., *carinicollis*, Tourn., *raffrayi*, Tourn., synonymy noticed; DESBROCHERS, p. cxciv, Bull. Soc. Ent. Fr. (6) viii. *T. discithorax*, Desbr., and *undulatus*, Desb., referred to *Pachytychius*, and are one species; *T. longitubus*, Desb., = (*raffrayi*, Tourn.): BEDEL, p. 287, Ann. Soc. Ent. Fr. (6) viii.

Apeltarius, Desb., = (*Ectatotychius*, Tourn.); BEDEL, p. 287, Ann. Soc. Ent. Fr. (6) viii.

Sibynes relutifer, *subellipticus*, *algericus*, Desb., synonymy of; DESBROCHERS, p. cxciv, Bull. Soc. Ent. Fr. (6) viii.

S. subtriangulifer, Corsica, DESBROCHERS, p. cxciv, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Cionus scrophulariæ, cocoons; BRANDICOURT, Bull. Soc. L. Nord France, viii, pp. 313-315.

C. caucasicus, Circassia, REITTER, Wien. ent. Z. vii, p. 270, n. sp.

Gymnetrides, *Alcidides*, *Haplonycides*.

Gymnetron ceronicæ and *beccabungæ*, validity of; SCHILSKY, Deutsche. Z. xxxii, p. 127.

G. seriatus, France, JACQUET, p. xcvi, Bull. Soc. Ent. Fr. (6) viii; *G. tenuirostre*, Beyrout, STIERLIN p. 59, MT. schw. ent. Ges. viii: n. spp.

Alcides carbonarius, Rangoon, *obtusius*, Sarawak, *gallarius*, Saylee, PACOE, p. 412, Ann. N. H. (6) ii, n. spp.

Zantes, n. g., p. 413, near *Metatygex*, for *Z. limbatus*, n. sp., Madagascar, p. 414, woodcut; PASCOE, Ann. N. H. (6) ii.

Cryptorhynchides.

Ectatorhinus, list of the species of; RITSEMA, Notes Leyd. Mus. 1, p. 168.

Ithyporus margaritatus, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 297, n. sp.

Misgnus, n. g. (*Ithyporinae*), for *N. dissimilis*, n. sp., Niam-niam (Sumatra); PASCOE, p. 414, Ann. N. H. (6) ii.

Desmidophorus lanosus, Madagascar, *maculatus*, Batchian, p. 415, *funebis*, Waigiou, *morbosus*, Siam, p. 416, PASCOE, Ann. N. H. (6) ii, n. spp.

Psepholax pascoei, Norfolk I., OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 1008, n. sp.

Ocladius serripes, Damaraland, PÉRINGUEY, p. 178, Tr. S. African Phil. Soc. iv, n. sp.

Mecistocerus fasciatus, Centr. Africa, p. 298, *hildebrandti*, *albocinctus*, Madagascar, p. 299, QUEDENFELDT, B. E. Z. xxxii, n. spp.

Poropterus afflicus, Saylee, *basilicus*, Kaioa, p. 417, *irritus*, Ceram, p. 418, PASCOE, Ann. N. H. (6) ii, n. spp.

Pachyonyx mucoreus, Chev., n. var. *maculiventris*, QUEDENFELDT, B. E. Z. xxxii, p. 300.

Acalles henoni, Algeria, BEDEL, p. xxxvi, Bull. Soc. Ent. Fr. (6) viii; *A. horridulus*, Circassia, REITTER, Wien. ent. Z. vii, p. 268 : n. spp.

Gasterocercus richteri, Porto Rico, FISCHER, B. E. Z. xxxii, p. 154, n. sp.

Cryptorhynchus maugifera, ravages, &c.; SIMMONS (813).

Enteles vicinus, Australia, FAUST, S. E. Z. xlix, p. 309, n. sp.

Ceuthorhynchides, Baridiides.

Caliodes tener, Attica, REITTER, Deutsche c. Z. xxxii, p. 432, n. sp.

Allodactylus weisei, Circassia, REITTER, Wien. ent. Z. vii, p. 272, n. sp.

Ceuthorhynchus urticae and *pallidicornis*, characters of; JACQUET, p. cv, Bull. Soc. Ent. Fr. (6) viii.

C. brisouti, p. 167, *bituberculatus*, p. 168, *sartus*, p. 169, *Turkestan*, *inclemens*, Ussuri, p. 170, *stachylis*, Italy, &c. p. 171, *abchasicus*, Arabica Mts., p. 173, FAUST, Hor. Ent. Ross. xxii, n. spp.

Rhytidolosomus filirostris, Circassia, REITTER, Wien. ent. Z. vii, p. 271, n. sp.

Phytobius, notes on habits of; SCHWARZ, P. E. Soc. Wash. i, p. 75.

Baris timidus, Rossi, and *nitens*, Fab., identity discussed; FAUST, pp. 177-180, Hor. Ent. Ross. xxii.

B. squamipes, Turkestan, FAUST, Deutsche c. Z. xxxii, p. 43, n. sp.

Barisoma, n. g., near *Baris*, p. 309, for *B. carbo*, n. sp., Hongkong, p. 310; FAUST, S. E. Z. xlix.

Limnobaris scutellaris, p. 273, *bedeli*, p. 274, Caucasus, REITTER, Wien. ent. Z. vii, n. spp.

Campyloscelides, Calandrides.

Amorhaius? *caricollis*, Centr. Africa, QUEDENFELDT, p. 301, pl. vi, fig. 10, B. E. Z. xxxii, n. sp.

Food-habits of N. American *Calandridæ* ; Ins. Life, i, pp. 198 & 199.

Aphiocephalus castanescens, Madagascar, FAIRMAIRE, Le Nat. (2) ii, p. 12, n. sp.

Rhynchophorus quadrangulus, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 302, n. sp.

Sphenophorus obscurus, descriptive note, metamorphoses, injuries to sugar-cane in the Sandwich Is. ; RILEY & HOWARD (763).

S. ritticollis, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 194 ; *S. (Calyptrix) procerus*, p. 303, *S. politus*, p. 304, *nigro-plagiatus*, p. 305, *cruciatus*, p. 306, Centr. Africa, *id. t. c.* : n. spp.

Sitophilus impressicollis, reticulatus, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 307, n. spp.

Culandra oryza, L., its ravages in India ; COTES (167).

Cossonides.

Echinodes, n. g., for *E. ravouzi*, n. sp., France ; JACQUET, p. cxliv, Bull. Soc. Ent. Fr. (6) viii.

Pentarthrum millingtoni, nepeanum, Norfolk I., OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 1009, n. spp.

Cossonus strangulatus, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 195, n. sp.

Menites subcylindricus, habits of, = (*rufipennis*, Lec.) ; LUGGER, P. E. Soc. Wash. i, p. 36.

Rhyncolus punctulatus, Boh., habits, &c. ; DECAUX, Feuille. Nat. xix, pp. 2-6. *R. corticalis*, Boh., referred to *Allomimus* ; SCHWARZ, P. E. Soc. Wash. i, p. 44.

SCOLYTIDÆ.

Notes on some N. American species ; SCHWARZ, P. E. Soc. Wash. i, p. 45.

Xyleborus calatus, note on habits ; SCHWARZ, P. E. Soc. Wash. i, p. 47.

Tomicus austriacus, Austria, WACHTL (902), n. sp.

Bostrychus chalcographus and *typographus*, periods of appearance ; Ent. Nachr. xiv, p. 364.

Crypturgus pusillus destroying larches ; Ent. Nachr. xiv, p. 271.

Monarthrum mali, habits ; SCHWARZ, P. E. Soc. Wash. i, p. 48.

Pityophthorus querciperda, N. America, SCHWARZ, P. E. Soc. Wash. i, p. 56, n. sp.

BRENTHIDÆ.

[Cf. FAIRMAIRE (242), KOLBE (451), QUEDENFELDT (695).]

Orychodes sinensis, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 138, n. sp.

Anisognathus mechowii, figured, pl. vi, fig. 11 ; QUEDENFELDT, B. E. Z. xxxii.

Isognathus, n. g., for *Anisognathus mechowii* and *anaticeps*, Kolbe ; KOLBE, p. 305, Ent. Nachr. xiv.

Spatherinus eupsaloides, picturatus, p. 306, *ophthalmicus, juvenilis*, p. 307, *longiceps*, p. 308, W. Africa, KOLBE, Ent. Nachr. xiv, n. spp.

Pericorlus latipes, figured, pl. vi, fig. 12 ; QUEDENFELDT, B. E. Z. xxxii.

ANTHOTRIBIDÆ, BRUCHIDÆ.

[*Cf.* FAIRMAIRE (251).]Fossil, presumed *Anthribid*; KOLBE (452).*Tophoderes nubeculosus*, Madagascar, FAIRMAIRE, *Le Nat.* (2) i, p. 32, n. sp.Tabulation of the *Bruchi* of France, extracted from Baudi's revision, and translated by ABEILLE DE PERRIN, *Rev. d'Ent.* vii, pp. 77-90.

CERAMBYCIDÆ.

[*Cf.* BATES (44), BLACKBURN (77), FAIRMAIRE (238, 239, 242, 243, 244, 250, 251, 252), FISCHER (274), GAHAN (293, 294, 295, 296, 297, 298, 299, 300), GANGLBAUER (302, 303, 304, 305, 375, 631), GESTRO (307), HEYDEN (375), OLLIFF (634), ORMAY (643), PASCOE (660), PÉRINGUEY (667), PUTON (693), QUEDENFELDT (694), REITTER (728), RITSEMA (765, 766, 767, 768), SÉMENOW (832).]*Prionides.**Cantharocnemis plicipennis*, Tanganyika, FAIRMAIRE, *Le Nat.* (2) i, p. 223, n. sp.*Prionus coriarius*, monstrosity; KRAUSE, *SB. nat. Fr.* 1888, p. 145, woodcut. *P. persicus*, Redt., *besicanus*, Fairm., and *schaufussi*, Jak., synonymical note, &c.; GANGLBAUER, *Deutsche e. Z.* xxxii, p. 268.*P. heydeni*, p. 265, *curticornis*, p. 266, Turkestan, GANGLBAUER, *Deutsche e. Z.* xxxii; *P. (Psilopus) brevis*, *P. (P.?) turkestanicus*, Turkestan, SÉMENOW, p. 157, *Wien. ent. Z.* vii: n. spp.*Cacosceles lacordairei*, Bates, = (*crassicornis*, Pér.) ; PÉRINGUEY, *Tr. S. African Phil. Soc.* iv, rectifications, p. 191.*Tozeutes basilis*, Norfolk I., OLLIFF, *P. Linn. Soc. N.S.W.* (2) ii, p. 1010, n. sp.*Syennesis*, n. g., near *Monodesmus*, p. 511, for *S. dispar*, n. sp., Brazil, p. 512, pl. xiv, figs. 6 ♂ & 7 ♀; PASCOE, *Tr. E. Soc.* 1888.*Cerambycides.**Drynochares starcki*, Caucasus, GANGLBAUER, *Deutsche e. Z.* xxxii, p. 398, n. sp.*Zanium crocatum*, Natal, PASCOE, *Tr. E. Soc.* 1888, p. 492, n. sp.*Xystrocera globosa*, ravages of, at Cairo; B. E. Z. xxxii, p. 15: see also Economic.*X. promecoides*, Malacca, PASCOE, *Tr. E. Soc.* 1888, p. 492; *X. trivittata*, p. 196, *metallica*, p. 197, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii: n. spp.*Zathecus batzii*, Ecuador, PASCOE, *Tr. E. Soc.* 1888, p. 493, n. sp.*Neocerambyx sordidus*, Lvs., PASCOE, p. 491, *Tr. E. Soc.* 1888, n. sp.*Cerambyx scopoli*, note on habits; LUCAS, p. clxix, *Bull. Soc. Ent. Fr.* (6) viii*Trachylophus*, n. g., p. 59, near *Mallambyx* and *Xoanodera*, for *T. sinensis*, China, *approximator*, Java, n. spp., p. 60; GAHAN, *Ann. N. H.* (6) ii.

- Stromatium crassipes*, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 198, n. sp.
- Gnatholea picicornis*, S. Africa, FAIRMAIRE, p. 203, Ann. Soc. Ent. Fr. (6) viii. n. sp.
- Atesta tutei*, Australia, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 284, n. sp.
- Coptocercus fraternus*, Yorke Peninsula, BLACKBURN, Tr. R. Soc. S. Austr. x, p. 285, n. sp.
- Arrythmus pullimembris*, Madagascar, FAIRMAIRE, Le Nat. (2) ii, p. 22, fig. 1, n. sp.
- Bethelium puncticollis*, W. Australia, PASCOE, Tr. E. Soc. 1888, p. 493, n. sp.
- Ceresium nigrum*, Christmas I., GAHAN, p. 540, P. Z. S. 1888; *C. lineigerum*, Queensland, PASCOE, Tr. E. Soc. 1888, p. 493 : n. spp.
- Icariotia*, n. g., near *Toxotus*, for *I. unicolor*, p. 497, *fulvicornis*, *scapularis*, pl. xiv, fig. 4, p. 498, Madagascar, PASCOE, Tr. E. Soc. 1888, n. spp.
- Eccrisis*, n. g., near *Anthrribola*, for *E. abdominalis*, pl. xiv, fig. 3, n. sp., Madagascar, PASCOE, p. 499, Tr. E. Soc. 1888.
- Toxotus stigmatipennis*, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 71, n. sp.
- Apheledis*, n. g. (*Toxotine*), p. 499, for *A. velutinus*, n. sp., Madagascar, pl. xiv, fig. 9, p. 500, PASCOE, Tr. E. Soc. 1888.
- Antigenes*, n. g. (*Toxotides*), for *A. funebris*, n. sp., pl. xiv, fig. 1, Madagascar; PASCOE, p. 500, Tr. E. Soc.
- Logisticus latesulcatus*, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 71, fig. 6; *L. sesquivittatus*, Madagascar, *id. op. cit.* ii, p. 23, fig. 2 : n. spp.
- Tomobrachyia*, n. g., for *T. nigroplagiata*, n. sp., Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 72.
- Leptura nana* and *exigua*, Newm., note on characters and variation of; HORN, Tr. Am. Ent. Soc. xv, p. 301.
- Pidonia lurida* n. var. *ganglbaueri*; ORMAY, p. 168, Wien. ent. Z. vii.
- Cortodera alpina* n. var. *starcki*; REITTER, Wien. ent. Z. vii, p. 280.
- Bimia bicolor* var. = (*femorialis*, Saund.) ; BLACKBURN, Tr. R. Soc. S. Austr. x, p. 286.
- Callisphyris semicaligatus*, Fairm., = (*schythei*, Phil.), figured, pl. ii, fig. 10; FAIRMAIRE, Miss. Sci. Cap Horn. vi, p. 60.
- Nerydalis major*, L., habits; LIBERICH, Soc. Ent. iii, p. 76.
- Eroschema affine*, Queensland, PASCOE, Tr. E. Soc. 1888, p. 497, n. sp.
- Pempamacra argentata*, Eclipse I., *condita*, Queensland, PASCOE, Tr. E. Soc. 1888, p. 494, n. spp.
- Mecaspis simulatrix dives*, W. Africa, PASCOE, Tr. E. Soc. 1888, p. 495, n. spp.
- Aphrodisium griffithi*, Hope, = (*Pachyteria zonopteroides*, Fleut.) ; RITSEMA, Notes Leyd. Mus. x, p. 198.
- A. albardæ*, Java, RITSEMA, Notes Leyd. Mus. x, p. 193, n. sp.
- Pachyteria bicolor*, Parry, p. 180, *affinis*, Rits., p. 191, redescribed; RITSEMA, Notes Leyd. Mus. x.
- P. superba*, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 128; *P. borrei*, Java, p. 178, *pryeri*, p. 183, *hageni*, p. 185, Borneo, *evertsi*, p. 187, *oberthuri*, p. 190, Sumatra, RITSEMA, Notes Leyd. Mus. x : n. spp.

Callichroma? davidis, Deyr., is only a variation of *bimaculata*, White; GAHAN, p. 60, Ann. N. H. (6) ii.

C. chrysogaster, Ceylon, RITSEMA, Notes Leyd. Mus. x, p. 195; *C. carinicolle*, p. 198, *rugicolle*, p. 199, *parallelipenne*, p. 200, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii : n. spp.

Philematium capense, S. Africa, PÉRINGUEY, p. 178, Tr. S. African Phil. Soc. iv, n. sp.

Polyzonus scalaris, Pasc., figured, fig. 7, pl. 180; WATERHOUSE, Aid.

P. flavipennis, Zululand, PÉRINGUEY, p. 179, Tr. S. African Phil. Soc. iv, n. sp.

Promeces viridis, Pasc., figured, fig. 5, pl. 180; WATERHOUSE, Aid.

P. auratus, p. 495, *longicollis*, *austerus*, p. 496, S. Africa, PASCOE, Tr. E. Soc. 1888, p. 496, n. spp.

Closteromerus reticollis, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 200; *C. quadrinotatus*, S. Africa, PÉRINGUEY, p. 179, pl. 3, fig. 15, Tr. S. African Phil. Soc. iv : n. spp.

Euporus ignicollis, Pasc., figured, fig. 6, pl. 180; WATERHOUSE, Aid.

Sympiezocera persica, Solsky, note on; GANGLBAUER, p. 197, Hor. Ent. Ross. xxii.

S. sinensis, China, GAHAN, p. 61, Ann. N. H. (6) ii, n. sp.

Callidium violaceum, L., and its parasite, note on; RÖDER, Ent. Nachr. xiv, p. 219.

C. (Lioderes) henschi, Herzegovina, PUTON, Rev. d'Ent. vii, p. 23, n. sp.

Cleroclytus semirufus, Ktz., referred to *Enderas*, Lec.; HEYDEN, Deutsche e. Z. xxxii, p. 41.

Olytus latofasciatus, Motsch., and *plebeius*, F., note on; KRAATZ, Deutsche e. Z. xxxii, p. 203.

C. tenuicornis, p. 142, *polyzonus*, *artemisiae*, p. 143, *tsitoensis*, p. 144, *fuliginosus*, p. 145, China, FAIRMAIRE, Rev. d'Ent. vii; *C. duo*, *moupinensis*, p. 33, *C. (Xylotrechus) magnicollis*, p. 34, *C. (Clytanthus) cuneatus*, p. 35, China, FAIRMAIRE, Ann. Ent. Belg. xxxii : n. spp.

Chlidones lineolatus, Waterh., figured, fig. 4, pl. 180; WATERHOUSE, Aid.

Stenosphenus notatus, Ol., habits of; HAMILTON, p. 66, Canad. Ent. xx.

Purpuricenrus pratti, China, GAHAN, p. 61, Ann. N. H. (6) ii [but *P. sideriger*, Fairm., = (*prattii*, Gahan); FAIRMAIRE, p. clv, Bull. Soc. Ent. Fr. (6) viii]; *P. globiger*, *sideriger*, p. 139, *petasifer*, p. 140, China, FAIRMAIRE, Rev. d'Ent. vii : n. spp.

Amarysius, n. g., p. 140, for *A. dilatatus*, n. sp., Pekin, p. 141; FAIRMAIRE, Rev. d'Ent. vii.

Charinotes richteri, Santa Catherina, FISCHER, B. E. Z. xxxii, p. 490, n. sp.

Apatophysis tomentosa, Gebl., = (*toxotoides*, Chev., and *Prionus obtusicollis*, Motsch.); GANGLBAUER, Hor. Ent. Ross. xxii, p. 193.

Hornibius, n. n. for *Hornius*, Fairm., the insect figured and re-described; FAIRMAIRE, Miss. Sci. Cap Horn, vi, pp. 60 & 61, pl. ii, fig. 11.

Lamiides.

Importance of anterior coxal cavities in classification of: GAHAN, p. 279, note Ann. N. H. (6) i.

Xyloteles pattersoni, *selwyni*, Norfolk I., OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 1012, n. spp.

Dorcudion blanchardi, Muls., note on ; KRAATZ, Deutsche e. Z. xxxii, p. 75.

Æthalodes, n. g., near *Trachystola*, for *Æ. verrucosus*, n. sp., North China, pl. xvi, fig. 1 ; GAHAN, p. 270, Ann. N. H. (6) i.

Stratioceros, Lac., = (*Cacoscapus*, Th.) ; GAHAN, p. 262, Ann. N. H. (6) ii.

Leprodera, form of prosternum, note on ; habitat of *L. crucifera*, Fab. ; GAHAN, Ann. N. H. (6) ii, p. 390. *L. verrucosa*, Pasc., = (*arista*, Th.) ; *id. t. c.* p. 262.

L. lecta, Siam, p. 389, *insidiosa* (Chev.), India, p. 391, GAHAN, Ann. N. H. (6) ii, n. spp.

Epepeotes (*Leprodera*) *spinosa*, Th., = (*meridianus*, Pasc.) ; GAHAN, p. 400, Ann. N. H. (6) ii.

Epepeotes uncinatus, p. 271, *albomaculatus*, p. 272, N. India, GAHAN, Ann. N. H. (6) i, n. spp.

Arctolamia, n. g., near *Epicedia*, for *A. villosa*, n. sp., Burma ; GESTRO, p. 129, Ann. Mus. Genov. (2) vi.

Pelargoderus meleagris, Pasc., figured, fig. 3, pl. 180 ; WATERHOUSE, Aid. *P. flavicornis*, Nias I., GAHAN, p. 272, pl. xvi, fig. 3, Ann. N. H. (6) i, n. sp.

Paragnoma : the genus is not good ; *P. acuminipennis*, Blanch., and *Pelargoderus rugosus*, Waterh., synonymy noticed ; GAHAN, p. 400, Ann. N. H. (6) ii.

Dihammus spinipennis, New Caledonia, GAHAN, p. 275, Ann. N. H. (6) i, n. sp.

Eryulus, n. g., near *Monochamus*, for *E. polyspilus*, n. sp., Sumatra ; PASCOE, Tr. E. Soc. 1888, p. 501, pl. xiv, fig. 10.

Leuronotus, n. g., for *L. spatulatus*, n. sp., Solomon Is. ; GAHAN, p. 190, Ann. N. H. (6) i.

Monohammus officinator, White, = (*Archidice quadrimaculata*, Th.), should be placed in *Lamiomimus*, Kolbe ; GAHAN, p. 400, Ann. N. H. (6) ii. *M. beryllinus*, Hope, = (*melanostictus*, White), and is referable to *Melanaster* ; *M. viridipennis*, Chev., referred to *Domitia*, Th. ; *id. t. c.* p. 401. *M. desperatus*, Th., = (*fredericus*, White) ; *id. t. c.* p. 262 : referred to *Agnoderus* ; *id. t. c.* p. 401. *M. marciapor*, Newm., referred to *Anammus* ; *id. t. c.* p. 401. *M. carissimus*, Pasc., = (*Cælosterna tessellata*, White), it is a *Cælosterna* ; *id. op. cit.* i, p. 277.

M. rivulosus, E. India, *ciliatus*, China, GAHAN, p. 273, Ann. N. H. (6) i ; *M. auratus*, *bimaculatus*, p. 260, *amicator*, *griseatus*, p. 261, *ocellatus*, p. 262, E. India, *id. op. cit.* ii ; *M. modicus*, Madras, p. 391, *distinctus*, Assam, p. 392, *perplexus*, N. India, *vagus*, Gaboon ?, p. 393. *murinus*, Senegal, *plumbeus*, Congo, p. 394, *fulvisparsus*, Congo, *nyassensis*, Nyassa, p. 395, *id. t. c.* ; *M. albisparsus*, China, *id. t. c.* p. 62 ; *M. nativitatis*, Christmas I., *id. P. Z. S.* 1888, p. 540 : n. spp.

Psacothæu : the genus defined ; *P. (Monohammus) hilaris*, Pasc., = (*P. Diochares flavoguttata*, Fairm.) ; GAHAN, p. 400, Ann. N. H. (6) ii.

- Haplohammus speciosus*, p. 274, *socius*, p. 275, China, GAHAN, Ann. N. H. (6) i; *H. contemptus*, China, *id. op. cit.* ii, p. 62 : n. spp.
- Taniotes scalaris* var. *azoricus*, note on; KOLBE, Ent. Nachr. xiv, p. 179.
- T. simplex*, America, p. 396, *singularis*, Ecuador, p. 397, GAHAN, Ann. N. H. (6) ii, n. spp.
- Deliathis buquetii* var. *mira*, Chev., described; GAHAN, p. 398, Ann. N. H. (6) ii.
- D. batesi*, Mexico, GAHAN, p. 398, Ann. N. H. (6) ii, n. sp.
- Cyriocrates waterhousei*, Nias I., GAHAN, p. 276, pl. xvi, fig. 4, Ann. N. H. (6) i; *C. elegans*, Upper Burmah, *id. op. cit.* ii, p. 450 : n. spp.
- Melanauster leechi*, Kiu Kiang, GAHAN, p. 63, Ann. N. H. (6) ii, n. sp.
- Aristobia angustifrons*, Siam, GAHAN, p. 276, Ann. N. H. (6) i, n. sp.
- Celosterna* (*Lamia*) *pulchellator*, Westw., generic position noticed; *C. imitator*, White, referred to *Cyriocrates*; GAHAN, p. 277, Ann. N. H. (6) i.
- Euteniopsis*, n. g., for *Celosterna trifasciella*, White, nec Thomson; GAHAN, Ann. N. H. (6) i, p. 277.
- Goes tigrinus*, De Geer, = (*Monohammus rotator*, Fab.): GAHAN, p. 263, Ann. N. H. (6) ii.
- Haplothrix*, n. g., near *Goes*, p. 278, for *H. simplex*, n. sp., Siam, p. 279, pl. xvi, figs. 5 & 5a; GAHAN, Ann. N. H. (6) i.
- Thermonotus*, n. g., near *Cereopsius*, for *T. nigripes*, n. sp., India; GAHAN, p. 399, Ann. N. H. (6) ii.
- Agnoderus*, Th., note on the sexual characters in; GAHAN, p. 401, Ann. N. H. (6) ii.
- Uræcha punctata*, China, GAHAN, p. 63, Ann. N. H. (6) ii, n. sp.
- Psaromaia renei*, S. India, PASCUE, Tr. E. Soc. 1888, p. 501, n. sp.
- Omocyrius jansoni*, Borneo, RITSEMA, Notes Leyd. Mus. x, p. 201, n. sp.
- Peribasis albisparsa*, Borneo, RITSEMA, Notes Leyd. Mus. x, p. 203, n. sp.
- Pharsalia* (*Zygocera*) *mortalis*, Th., occurs twice in Munich Cat., also = (*P. albomaculata*, Poll.); GAHAN, p. 280, Ann. N. H. (6) i.
- P. alboplagiata*, Borneo, p. 279, *pulchra*, Siam, p. 280, GAHAN, Ann. N. H. (6) i, n. spp.
- Marmaroglypha sumatrana*, Serdang, RITSEMA, Notes Leyd. Mus. x, p. 206, n. sp.
- Batocera pulchellator*, Westw., generic position queried, = (*Euoplia argenteomaculata*, Auriv.); RITSEMA, Notes Leyd. Mus. x, p. 198.
- Rosenbergia exigua*, New Guinea, GAHAN, p. 280, Ann. N. H. (6) i, n. sp.
- Orsidis ampliatus*, Solomon Is., GAHAN, p. 191, Ann. N. H. (6) i, n. sp.
- Anghostetha*, n. g., *Prosopocerida*, p. 201, for *A. superdoides*, n. sp., Centr. Africa, p. 202; QUEDENFELDT, B. E. Z. xxxii.
- Zographus modestus*, S. Africa, PERINGUEY, p. 180, Tr. S. African Phil. Soc. iv, n. sp.
- Sternolomis* (*Lamia*) *ænea*, Parry, note on; GAHAN, p. 401, Ann. N. H. (6) ii.
- S. wismani*, p. 203, *S. (Qui-nalanga) niveipectus*, p. 204, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, n. spp.

Plagiomus, n. g., *Tragocephalidæ*, p. 205, for *P. multinotatus*, n. sp., Centr. Africa, p. 206; QUEDENFELDT, B. E. Z. xxxii.

Inesida guttata, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 206, n. sp.

Rhaphidopsis (Eutenia) elegans, Waterh., referred to *Cælosterna*; GAHAN, Ann. N. H. (6) i, p. 277.

Spodotænia spinicornis, S. Africa; PÉRINGUEY, p. 182, pl. iii, fig. 16, Tr. S. African Phil. Soc. iv, n. sp.

Zygocera (?) *alborigulata*, Madagascar, FAIRMAIRE, Le Nat. (2) ii, p. 23, n. sp.

Orica, n. g., *Phrynoides*, for *Zygocera*?, *alborigulata*, Fairm. (*suprà*); PASCOE, Tr. E. Soc. 1888, p. 511.

Mullonia australis, Natal, PÉRINGUEY, p. 181, Tr. S. African Phil. Soc. iv, n. sp.

Olenecamptus compressipes, Cambodia, FAIRMAIRE, p. 370, Ann. Soc. Ent. Fr. (6) viii; *O. obsoletus*, Pekin, *id.*, Rev. d'Ent. vii, p. 146: n. spp.

Heteroclytomorpha punctata, Solomon Is., GAHAN, p. 192, Ann. N. H. (6) i, n. sp.

Sormida, n. g., for *Heteroclytomorpha*, Lacord., *nec* Blanch.; GAHAN, Ann. N. H. (6) i, p. 193.

Grynez, n. g. (*Homonea* group), for *G. lineatus*, n. sp., S. India, pl. xiv, fig. 2; PASCOE, p. 502, Tr. E. Soc. 1888.

Enicoides fichteli, Schr., note on; OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 1013, n. sp.

Dysthaeta nævia, Norfolk I., OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 1011, n. sp.

Grammæchus ligatus, Labuan, PASCOE, Tr. E. Soc. 1888, p. 503, n. sp.

Ecyroschema rugata, N'Gami, PASCOE, Tr. E. Soc. 1888, p. 503, n. sp.

Dichostates muelleri, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 207, n. sp.

Hecyrida rufolineata, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 208, n. sp.

Acroptycha, n. g., *Nipponidæ*, p. 209, for *A. spinifera*, n. sp., Centr. Africa, p. 210, QUEDENFELDT, B. E. Z. xxxii.

Praonotha perplexa, Christmas I., GAHAN, P. Z. S. 1838, p. 541, n. sp.

Sthenias grisator, F., ♂ described: *S. pascoei*, n. n. for *grisator*, Pasc., *nec* F.; RISENA, Notes Leyd. Mus. x, p. 272.

Alybæ nigratarsis, Madagascar, PASCOE, Tr. E. Soc. 1888, p. 504, n. sp.

Ropica cylindrica, India, PASCOE, Tr. E. Soc. 1888, p. 504, n. sp.

Amblesthis geminus, Grahamstown, PASCOE, Tr. E. Soc. 1888, p. 505, n. sp.

Sophronica reducta, p. 508, S. Africa, *amplipennis*, Angola, *oblonga*, S. Africa, p. 506, PASCOE, Tr. E. Soc. 1888, n. spp.

Corus, n. g., near *Sophronica*, p. 506, for *C. annulicornis*, n. sp., S. Africa, p. 507; PASCOE, Tr. E. Soc. 1888.

Pachypezu marginata, p. 507, *teres*, p. 508, Brazil, PASCOE, Tr. E. Soc. 1888, n. spp.

Hippopsicon cribricollis, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 210, n. sp.

Hippopsis tenuicittata, Cochín China, *tonkinea*, Tonkin, FAIRMAIRE, p. 371, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Pseudocalamobius filiformis, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 146, n. sp.

Ceratographis, n. n. for *Graphisurus*, Horn, *nec* Lec.; GAHAN, p. 300, Tr. Am. Ent. Soc. xv.

Presumed fossil *Astynomus*; KOLBE (452).

Sparna macilenta, Ecuador, PASCOE, Tr. E. Soc. 1888, p. 508, pl. xiv, fig. 5, n. sp.

Saperda fayi, Bland, pp. 6-8, *concolor*, Lec., pp. 8 & 9, habits of; HAMILTON, Canad. Ent. xx.

S. simulans, p. 64, *brunnipes*, p. 65, China; GAHAN, Ann. N. H. (6) ii, n. sp.

Chrysaperda collaris, Ecuador, PASCOE, Tr. E. Soc. p. 509, n. sp.

Mecas (sub *Saperda*) *cana*, Newm., = (*saturnina*, Lec.); *inornata*, Say, = (*cinerea*, Newm., and *senescens*, Bates): GAHAN, Tr. Am. Ent. Soc. xv, p. 300: cf. also HORN, t. c. p. 301.

Glenida, n. g., p. 65, near *Neozantha*, for *G. suffusa* and *cyaneipennis*, China, n. spp., p. 66; GAHAN, Ann. N. H. (6) ii.

Bacchisa singularis, Sumatra, RITSEMA, Notes Leyd. Mus. x, p. 253, n. sp.

Glenea celia, Sumatra, PASCOE, Tr. E. Soc. 1888, p. 509, n. sp.

Volumnia morosa, Angola, PASCOE, Tr. E. Soc. 1888, p. 510, n. sp.

Phytacia affinis, Har., n. varr.; REITTER, p. 282, Wien. ent. Z. vii. *P. hirsutula*, Fröhl., n. var. *homoiesthes*; GANGLBAUER, p. 197, Hor. Ent. Ross. xxii.

P. sareptana, S. Russia, GANGLBAUER, p. 376, Hor. Ent. Ross. xxii;

P. (Coptosia) heydeni, Mesopotamia, *id.* Deutsche e. Z. xxxii, p. 76: n. spp. *Mallosia mirabilis*, Fald., = (*ganglbaueri*, Kr.); KRAATZ, Deutsche e. Z. xxxii, p. 77.

M. triatis, Lenkoran, REITTER, Wien. ent. Z. vii, p. 134, n. sp.

Oberea holozantha, China, FAIRMAIRE, p. 35, Ann. Ent. Belg. xxxii;

O. scutellaris, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 147: n. spp.

Nitocris rubricollis, *vittata*, p. 183, *maculicollis*, *capensis*, p. 184, S. Africa, PERINGUEY, Tr. S. African Phil. Soc. iv, n. spp.

Blepisanis bohemani, Pasc., figured, fig. 8, pl. 180; WATERHOUSE, Aid.

B. dorsata, Zululand, PERINGUEY, p. 184, Tr. S. African Phil. Soc. iv, n. sp.

Thyestes funebris, China, GAHAN, p. 67, Ann. N. H. (6) ii, n. sp.

Ochrasius, n. g., near *Erenica*, p. 510, for *O. sticticus*, n. sp., Brazil, p. 511, pl. xiv, fig. 8; PASCOE, Tr. E. Soc. 1888.

CHRYSOMELIDÆ.

[*(Cf. ALLARD (1, 2), ANDRÉ (8), BALY (38, 39, 40), BONO (87), COSTA (164), DEWITZ (183), FAIRMAIRE (238, 242, 243, 244, 252), GESTRO (307, 308), HEYDEN (375), JACOBY (319, 410, 411, 412), JACOBY & HORN (413), LEFÈVRE (492, 493), MARSEUL (553), PERINGUEY (667), QUEDENFELDT (694), SCHÖNFELDT (813), WEISE (922, 923, 924, 925).)*]

Sagrides, Donacioides, Criocerides, Megalopides.

Sagra opaca, E. Africa, JACOBY, Tr. E. Soc. 1888, p. 189, pl. vii, fig. 7 ;
S. muelleriana, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 211 ;
S. leechi, Kiukiang, JACOBY, P. Z. S. 1888, p. 339 : n. spp.

Aulucoscelis candesei, figured and noticed, pl. xxxv, fig. 7, p. 2 ;
 JACOBY, Biol. Centr. Am. Col. vi (1), supp.

A. tibialis, Guatemala, pl. xxxv, fig. 2, *högei*, N. America and Mexico, fig. 6, p. 3, *variabilis*, figs. 8 & 9, *fulvipes*, p. 4, *sanguinea*, fig. 10, *elongata*, fig. 5, *femorata*, figs. 3 & 4, p. 5, *grandis*, fig. 1, p. 6, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1) supp., n. spp.

Donacia, respiration of larvæ of ; DEWITZ (183). *D. cincticornis*, Newm., figured, pl. xxxv, fig. 11 ; Biol. Centr. Am. Col. vi (1), supp.

D. lenzi, Japan, SCHÖNFELDT, Ent. Nachr. xiv, p. 33, n. sp.

Hæmonia nigricornis, Kir., figured, pl. xxxv, fig. 12, = (*flohri*, Jac.), p. 8, JACOBY, Biol. Centr. Am. Col. vi (1), supp.

Lema dimidiaticornis, de Borre, figured, pl. xxxv, fig. 13, variation noticed, p. 13 ; JACOBY, Biol. Centr. Am. Col. vi (1), supp.

L. longula, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 212 ; *L. cribraria*, p. 190, *apicicornis*, *laticollis*, pl. vii, fig. 1, p. 191, W. Africa, JACOBY, Tr. E. Soc. 1888 ; *L. bimaculata*, Andaman Is., BALY, Ent. M. M. xxv, p. 85 ; *L. dilutipes*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 149 ; *L. nigrilabris*, Brazil, JACOBY, Notes Leyd. Mus. x, p. 153 ; *L. quadraticollis*, *fabricii*, Mexico, *propinqua*, Panama, p. 9, *amabilis*, p. 10, *interstitialis*, p. 11, *fulvo-fusciata*, pl. xxxv, fig. 19, p. 12, *incerta*, Mexico, p. 13, *distincta*, Guatemala, *sexsignata*, Mexico, *apicicornis*, fig. 14, p. 14, *sexplagiata*, fig. 15 & p. 15, *obliterata*, p. 16, Panama, *bistriata*, p. 17, *nigrolineata*, fig. 25, *maculigera*, fig. 17, Mexico, *variabilis*, p. 18, *sexlineata*, fig. 22, p. 19, Guatemala, *chiriquensis*, fig. 18, Panama, p. 20, *forreri*, fig. 16, *cyaneo-fusciata*, p. 21, *strigipennis*, p. 22, *clurki*, fig. 21, *bella*, fig. 23, p. 23, Mexico, *stigmula*, Costa Rica, *regularis*, Panama, p. 24, *brunnea*, Mexico, *immaculipennis*, p. 25, *modesta*, Panama, *intricata*, Mexico, p. 26, *rugifrons*, Guatemala, p. 27, *ancoralis*, Panama, p. 28, *laticollis*, *palmeri*, Mexico, p. 29, *insularis*, fig. 20, *incisa*, fig. 24, Panama, p. 30, *variegata*, Guatemala, *permutans*, Centr. America, p. 31, *pardalina*, *flavipennis*, p. 33, *planipennis*, Mexico, *approximata*, Guatemala, p. 34, *cinctipennis*, p. 35, *yucatanæ*, p. 36, Mexico, *guatemalensis* = (*pubens*, Jac. olim, nec Lac.), p. 36, *eremita*, *illigeri*, p. 37, *jalapensis*, *spectabilis*, Mexico, *sallæi*, p. 38, *foveipennis*, p. 39, Centr. America, *bisulcata*, p. 40, *brevicornis*, p. 41, *relucens*, *dilaticollis*, p. 42, Mexico, *æneipennis*, Guatemala, *cæruleo-plagiata*, p. 43, *fulvo-marginata*, p. 44, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1), supp. : n. spp.

Crioceris asparagi, metamorphoses ; LUCAS, Bull. Soc. Ent. Fr. (6) viii, p. cxlv. : parasitism of *Myobia pumila* on ; LUCAS, Ann. Soc. Ent. Fr. (6) viii, pp. 102-104 : its diffusion in N. America ; Ins. Life, i, p. 29. *C. rugicollis*, Borre, figured, pl. xxxvi, fig. 2 ; Biol. Centr. Am. Col. vi (1). *C. melanopa*, Fab., habits ; BERTHELIN, p. clvi, Bull. Soc. Ent. Fr. (6) viii.

C. chinensis, *triplagiata*, Kiu Kiang, JACOBY, P. Z. S. 1888, p. 340 ; *C. curvipes*, *nitidicollis*, p. 45, Guatemala, *championi*, Panama, p. 46, *flohri*,

pl. xxxvi, fig. 1, p. 47, *rugipennis*, fig. 2, p. 48, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1) supp. : n. spp.

Sigrisma, n. g., p. 200, near *Crioceris*, for *S. tuberifrons*, n. sp., S. Africa, p. 201; FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii.

Megascelis minuta, Mexico, p. 53, *vittatipennis*, = (*vittata*, Jac. olim, nec Fab.), p. 51, *spinipes*, = (*stratiotica*, Jac. olim, nec Lac.), p. 52, Guatemala, *curta*, mexicana, pl. xxxvi, fig. 4, p. 53, *sallæi*, *robusta*, p. 54, *tibialis*, Mexico, *collaris*, p. 55, *championi*, Centr. America, *quadrisignata*, Panama, p. 56, JACOBY, Biol. Centr. Am. Col. vi (1) supp. : n. spp.

Mastostethus salvini, figured, pl. xxxvi, fig. 5, noticed, p. 58; JACOBY, Biol. Centr. Am. Col. vi (1) supp.

M. cordovens, pl. xxxvi, fig. 7, p. 58, Mexico, *gracilent*, fig. 6, Panama, p. 59, *femuratus*, fig. 8, Guatemala, p. 63, *modestus*, fig. 13, Mexico, *panamensis*, figs. 9 & 10, p. 61, *imitans*, fig. 11, *humero-notatus*, fig. 12, p. 62, *octomaculatus*, fig. 14, p. 63, Panama, JACOBY, Biol. Centr. Am. Col. vi (1) supp., n. spp.

Megalopus violaceo-fasciatus, Panama, pl. xxxvi, fig. 15, p. 64, JACOBY, Biol. Centr. Am. Col. vi (1), supp., n. sp.

Clythrazeloma and *Temnaspis*, note on; KRAATZ, Deutsche c. Z. xxxii, p. 202.

Pæcilomorpha mutillaria, Clk., = (*Mutilloides albidofasciatus*, F.); FAIRMAIRE, Notes Leyd. Mus. x, p. 271.

Clythrides, *Cryptocephalides*, *Lamprosomides*.

Miopristis (*Macrolenes*) *bella*, Transvaal, PÉRINGUEY, p. 186, Tr. S. African Phil. Soc. iv, n. sp.

Camptolenes opacula, S. Africa, FAIRMAIRE, p. 201, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Clytra humeralis, Schneid., *sezpunctata*, Scop., *aurita*, L., cases of described; HACKER, Wien. ent. Z. vii, pp. 53 & 54.

C. laevofasciata, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 213, n. sp.

Lachnæa pinguis, L. (*Camptolenes*), *proxima*, p. 187, *lugubris*, p. 188, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. iv, n. sp.

Titubæa sernotata, with var. *natalica*, S. Africa, PÉRINGUEY, p. 189, Tr. S. African Phil. Soc. iv; *T. brevilineata*, pl. xxxvi, fig. 18, *kögei*, fig. 16, Mexico, p. 66, *guatemalensis*, Guatemala, *villosa*, fig. 17, Mexico, p. 67, JACOBY, Biol. Centr. Am. Col. vi (1) supp. : n. spp.

Labidostomis centromaculata, Gen., var. noticed; COSTA, Atti Acc. Napoli (2) i, No. 2, p. 87.

L. insidiosa, S. Africa, PÉRINGUEY, p. 185, Tr. S. African Phil. Soc. iv, n. sp.

Gynandrophthalmus semiaurantiact, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 150; *G. subsignata*, China, FAIRMAIRE, p. 36, Ann. Ent. Belg. xxxii; *G. ruatanensis*, Honduras, *panamensis*, Panama, JACOBY, p. 68, Biol. Centr. Am. Col. vi (1) supp. : n. spp.

Coptocephala bifasciata, Kiu Kiang, JACOBY, P. Z. S. 1888, p. 341, n. sp.

Diapromorpha (*Peploptera*) *zambesiana*, S. Africa, PÉRINGUEY, p. 189, Tr. S. African Phil. Soc. iv, n. sp.

Megulostomis anachoreta, La., fig. 23, *amazona*, Jac., fig. 24, figured, pl. xxxvi; JACOBY, Biol. Centr. Am. Col. vi (1).

M. metallica, Panama, pl. xxxvi, fig. 19, p. 69, *affinis*, Guatemala, p. 70, *femorata*, fig. 20, Mexico, p. 71, *punctatissima*, fig. 22, Guatemala, *fulripes*, fig. 21, Salvador, p. 72, *viridifusciata*, Guatemala, p. 73, JACOBY, Biol. Centr. Am. Col. vi (1), n. spp.

Coscinoptera purpurea, Panama, JACOBY, p. 74, pl. xxxvi, fig. 25, Biol. Centr. Am. Col. vi (1) supp., n. sp.

Euryscopa nigrirarsis, Panama, pl. xxxvii, fig. 1, *mexicana*, fig. 2, p. 76, *fulrilabris*, *villosa*, fig. 3, p. 77, *semistriata*, fig. 4, *longicollis*, fig. 5, p. 78, *fulripes*, Mexico, *regularis*, fig. 6, Guatemala, *parvula*, fig. 7, Mexico, p. 79, JACOBY, Biol. Centr. Am. Col. vi (1) supp., n. spp.

Cryptcephalus flavipes, F., egg described; HACKER, Wion. ent. Z. vii, p. 54.

C. ulnicola, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 49; *C. equiseti*, p. 27, *cognatus*, p. 28, Sardinia, *id. op. cit.* ii, No. 8; *C. tardus*, Monte Rosa, WEISE, Deutsche e. Z. xxxii, p. 368; *C. decastictus*, Yunnau, FAIRMAIRE, p. 36, Ann. Ent. Belg. xxxii; *C. chinensis*, Kiu Kiang, JACOBY, P. Z. S. 1888, p. 341; *C. dichrous*, *discoideus*, p. 151, *muscifer*, *nigroscripatus*, p. 152, Pekin, FAIRMAIRE, Rev. d'Ent. vii : n. spp.

Pachybrachus anoguttatus and *leucurus*, synonymical note; COSTA, Atti Acc. Napoli (2) i, No. 2, p. 87.

Lamprosoma punctostriolatum, *minutulum*, China, FAIRMAIRE, p. 37, Ann. Ent. Belg. xxxii : n. spp.

Eumolpides.

Agrianes subcostatus, Rio Grande do Sul, LEFÈVRE, p. lxxxi, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Spintherophyta lampros, Minas Geraes, LEFÈVRE, p. 291, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Lepronota singularis, *verrucosa*, p. 292, *cyarella*, p. 293, Minas Geraes, LEFÈVRE, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Meluxyonycha minurum, Minas Geraes, LEFÈVRE, p. 294, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Prionodera pusilla, Minas Geraes, LEFÈVRE, p. 294, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Colaspis intricata, p. 295, *cribellata*, *brunnipes*, p. 296, Minas Geraes, LEFÈVRE, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Campylochira gounellei, Minas Geraes, LEFÈVRE, p. 297, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Podoxenus ruficollis, Minas Geraes, LEFÈVRE, p. 297, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Entomochirus costulatus, Minas Geraes, LEFÈVRE, p. 298, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Corystheu nigrirarsis, Minas Geraes, LEFÈVRE, p. 298, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Argoa cupreata, p. 299, *rugulosa*, p. 300, Minas Geraes, LEFÈVRE, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Cellomius, n. g. (*Myochroites*), for *C. myochroites*, n. sp., Minas Geraes ; LEFÈVRE, p. 300, Ann. Soc. Ent. Fr. (6) viii.

Typophorus kirbyi varr. = (*basalis*, *ruficollis*, Baly, *sanguinicollis*, Lefv.); LEFÈVRE, p. 301, Ann. Soc. Ent. Fr. (6) viii.

T. centromaculatus, *erythropus*, *tarsalis*, Brazil, LEFÈVRE, p. 302, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Paria gounellei, *stigmula*, *maculigera*, Brazil, LEFÈVRE, p. 303, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Nodostoma leechi, China, JACOBY, P. Z. S. 1888, p. 344, n. sp.

Sybraicus viridimicans, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 72, n. sp.

Heteraspis nitidissima, Kiu Kiang, JACOBY, P. Z. S. 1881, p. 345, n. sp.

Eumolpus ritis, metamorphosis ; ANDRÉ (8).

Colasposoma episcopale, fig. 1, *viridicolle*, fig. 2, *breviusculum*, fig. 3, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 83 ; *C. foveipenne*, p. 192, *humerales*, p. 193, Madagascar, JACOBY, Tr. E. Soc. 1888 ; *C. yunnanum*, FAIRMAIRE, p. 37, Ann. Ent. Belg. xxxii : n. spp.

Acrothinium cupricolle, Kiu Kiang, JACOBY, P. Z. S. 1888, p. 342, n. sp.

Stethotes pallidipes, China, FAIRMAIRE, p. 36, Ann. Ent. Belg. xxxii, n. sp.

Corynodes leviusculus, E. India, LEFÈVRE, p. lxxxi, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Chrysochus globicollis, Amur River, LEFÈVRE, p. lxxxii, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Colaspoides chinensis, *opaca*, *spinipes*, Kiu Kiang, JACOBY, P. Z. S. 1888, p. 343 ; *C. trigonometra*, Brazil, LEFÈVRE, p. 304, Ann. Soc. Ent. Fr. (6) viii ; *C. pusilla*, Rio Grande do Sul, *id.*, p. lxxxii, Bull. Soc. Ent. Fr. (6) viii : n. spp.

Chrysomelides.

Chrysomela varians, Schall., and *violacea*, Goeze, oviposition of ; HACKER, Wien. ent. Z. vii, p. 55. *C. seriatipora*, Fairm., = (*edloughensis*, Fairm.) ; BEDEL, p. 287, Ann. Soc. Ent. Fr. (6) viii. *C. japana*, Baly, variation noticed, p. 345, *obscurifasciata*, Jac., is var. of *virgata*, Motsch., p. 346 ; JACOBY, P. Z. S. 1888. *C. viridana* n. var. *cupreo-purpurea* ; COSTA, Atti Acc. Napoli (2) i, No. 9, p. 49. *C. praeclsis*, Rog., foodplants ; HAMILTON, p. 65, Canad. Ent. xx. *C. (Leptinotarsa) modesta*, Jac., metamorphoses ; DUGÈS, La Nature (2) i, pp. 63-65, pl. vii.

C. foveopunctata, Yunnan, FAIRMAIRE, p. 39, Ann. Ent. Belg. xxxii ; *C. tonkinae*, Tonkin, *id.* Ann. Soc. Ent. Fr. (6) viii ; *C. (Polysticta) malagascariensis*, Madagascar, p. 193, pl. vii, figs. 6 & 6a, Tr. E. Soc. 1888 : n. spp.

Polysticta nigromaculata, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 216, n. sp.

Lina tremula, embryology ; GRABER (324).

L. salicivora, China, FAIRMAIRE, p. 49, Ann. Ent. Belg. xxxii, n. sp.

Melasoma octodecimpunctata, Kiu Kiang, JACOBY, P. Z. S. 1888, p. 346, n. sp.

Timarcha pimsliei, liquid secreted by ; BONO (87).

- T. strophium*, Spain, WEISE, Deutsche e. Z. xxxii, p. 124, n. sp.
Entomoscelis metallica, Sikkim, BALY, Ent. M. M. xxv, p. 85, n. sp.
Ovamela, n. g., near *Stenomela* and *Phyllochoris*, for *O. ornaticipennis*, n. sp., Madagascar, fig. 4, p. 83; FAIRMAIRE, Le Nat. (2) i.
Chalcolumpra viticis, China, FAIRMAIRE, p. 39, Ann. Ent. Belg. xxxii, n. sp.
Johannica, n. n. for *Diphyllocera*, Westw. (nec White); BLACKBURN, Tr. R. Soc. S. Austr. x, p. 287.
Gonioctena mannerheimi, Stål, = (*suturella*, Fairm.) ; FAIRMAIRE, Rev. d'Ent. vii, p. 154.
G. leseleuci, Morocco, p. 55, *rossola*, Taurus, p. 57, MARSEUL, L'Abcille, xxv, Mon. Chrys.; *G. dichroa*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 153 : n. spp.
Phytodecta flavipennis, *tredecimmaculata*, China, JACOBY, P. Z. S. 1888, p. 347, n. spp.
Paropsides hieroglyphica and *12-maculata*, Gobl., note on; JACOBY, P. Z. S. 1888, p. 348.
P. nigrofuscatus, China, JACOBY, P. Z. S. 1888, p. 348; *P. nigrosparvus*, Tonkin, FAIRMAIRE, p. 373, Ann. Soc. Ent. Fr. (6) viii : n. spp.

Halticides.

- Cladocera flaviceps*, All., = (*nigripennis*, Jac.), and *limbata*, All., = (*zanzibarica*, Jac.) ; FAIRMAIRE, p. cxxxii, Bull. Soc. Ent. Fr. (6) viii.
C. nigripennis, p. 197, pl. vii, fig. 2, *zanzibarica*, p. 198, Centr. Africa, JACOBY, Tr. E. Soc. 1888, n. spp.
Hippuriphila simplicipes, Kutsch., redescribed; WEISE, Deutsche e. Z. xxxii, p. 110.
Crepidodera setosella, China, FAIRMAIRE, p. 45, Ann. Ent. Belg. xxxii, n. sp.
Graptodera foliacea, Lec., life history; MURTFELDT, Ins. Life, i, pp. 74 & 75.
Systema bifasciata, Brazil, JACOBY, Notes Leyd. Mus. x, p. 155, n. sp.
Haltica (*Graptodera*) *modesta*, Brazil, JACOBY, Notes Leyd. Mus. x, p. 154; *H. saliceti*, p. 835, *carinthiaca*, Carinthia, p. 841, *fruticola*, Europe, p. 842, *palustris*, N. Germany, p. 844, WEISE, Ins. Deutsch. vi : n. spp.
Phygasia, n. g., for *P. helvola*, Dalm.; WEISE, p. 850, Ins. Deutsch. vi.
Æschrocnemis, n. g., for *Batophila græca*, All.; WEISE, p. 855, Ins. Deutsch. vi.
Phyllotreta ruficollis, Derbent, p. 859, *sisymbrii*, Caucasus, p. 860, *seidlitzii*, Rome, *vilis*, Greece, p. 861, *nitidicollis*, S. Italy, p. 863, WEISE, Ins. Deutsch. vi, n. spp.
Aphthona suturella, Asia Minor, p. 890, *sicelidis*, Sicily, p. 892, *melancholica*, Asturias, *punctatissima*, Vallombrosa, p. 893, *picipes*, Caucasus, p. 894, *microcephala*, Syria, p. 896, *czwalinæ*, Königsberg, p. 911, *stussineri*, Laibach, p. 918, WEISE, Ins. Deutsch. vi, n. spp.
Longitarsus pinguis, S. Europe, WEISE, p. 935, Ins. Deutsch. vi, n. sp.
Lactica haroldi, Brazil, JACOBY, Notes Leyd. Mus. x, p. 155, n. sp.

Rhopalotoma tuberculata, Clk., figured, fig. 1, pl. 183; WATERHOUSE, *Aid.*

Blepharida nigromaculata, p. 194, pl. vii, fig. 5, *laterimaculata*, p. 195, pl. vii, fig. 9, *ornaticollis*, p. 196, pl. vii, fig. 8, *intermedia*, p. 197, pl. vii, fig. 4, Africa, JACOBY, Tr. E. Soc. 1888, n. spp.

Edionychis madagascariensis, Matauga, JACOBY, Tr. E. Soc. 1888, p. 194, pl. vii, fig. 3, n. sp.

Hamletia, Cr., must be used for *Pachyonychis*, Clark, and the place is in *Edionychi*; JACOBY & HORN, Tr. Am. Ent. Soc. xv, pp. 302 & 303. *H. dimidiaticornis* redescribed; HORN, *t. c.* p. 304.

Phædromus waterhousei, note on; JACOBY, p. 303, and HORN, p. 304, Tr. Am. Ent. Soc. xv.

Psylliodes heydeni, Portugal, p. 785, *frivaldszkyi*, Hungary, p. 786, *cærulea*, Spain, p. 789, *cretica*, Crete, p. 791, *reitteri*, Vienna, p. 792, *latifrons*, Germany, p. 799, WEISE, *Ins. Deutsch.* vi, n. spp.

Galerucides.

Use of cotyloid cavities in classification of; BALY, J. L. S. xx, p. 156.

Aulacophorites: synopsis of the genera and species; ALLARD, pp. 305-324, *Ann. Soc. Ent. Fr.* (6) viii.

Aulacophora: tabulation of characters of *A. analis* and allies, with redescriptions; BALY, J. L. S. xx, pp. 175-182.

A. sternalis, S. Africa, FAIRMAIRE, p. 202, *Ann. Soc. Ent. Fr.* (6) viii; *A. hexaspilota*, Madagascar, *id.* Le Nat. (2) i, p. 83, fig. 5; *A. wilsoni*, Australia, *perroudi*, New Caledonia, p. 177, *frontalis*, Borneo, p. 181, *bipartita*, Flores, p. 183, *olivieri*, Australia, *occipitalis*, New Guinea, p. 184, *lavifrons*, Java, p. 185, BALY, J. L. S. xx: n. spp.

Paraulaca, n. g., for *Aulacophora angulicollis*, Motsch.; BALY, p. 168, J. L. S. xx.

Pseudocophora, notes on, with redescriptions of the species; BALY, J. L. S. xx, pp. 168-175: notes on the species of; ALLARD, pp. 324 & 325, *Ann. Soc. Ent. Fr.* (6) viii.

P. distincta, Borneo, *erichsoni*, Sumatra, p. 171, *wallacei*, Bouru, *flaveola*, Andaman Is., p. 173, *pectoralis*, Assam, p. 174, *perplexa*, Philippines, p. 175, BALY, J. L. S. xx, n. spp.

Asbecesta, Har., the species described; ALLARD, pp. 325 & 326, *Ann. Soc. Ent. Fr.* (6) viii.

Haplosoma, Jac., composition of the genus, with table of the species; ALLARD, pp. 326-328, *Ann. Soc. Ent. Fr.* (6) viii.

H. corniculata, E. India, *rostrispennis*, Celebes, p. 328, *picifemora*, Philippines, *africana*, Cameroons, p. 329, *longicornis*, E. India, *annamita*, Annam, p. 330, ALLARD, *Ann. Soc. Ent. Fr.* (6) viii, ? n. spp.

Malaxia: note on the genus, querying, as doubtfully distinct, *Galerucella*, Cr., *Trirhabda*, Chap., and *Glyptolus*, Jac.; ALLARD, *Ann. Soc. Ent. Fr.* (6) viii, pp. 331 & 332.

M. alluaudi, *nigricollis*, W. Africa, *aurulimbata*, Natal, *purpurea*, China, ALLARD, p. 332, *Ann. Soc. Ent. Fr.* (6) viii, ? n. spp.

Phyllobrotica (?) *ornata*, China, JACOBY, P. Z. S. 1888, p. 349, n. sp.

Diabrotica 12-*punctata*, ravages in N. America; WEBSTER, in *Riley Rep.* 1887, p. 148.

- D. brasiliensis*, Brazil, JACOBY, Notes Leyd. Mus. x, p. 156, n. sp.
- Hallirhotius*, n. g., near *Malacosoma*, p. 202, for *H. africanus*, n. sp., Zanzibar, p. 203; JACOBY, Tr. E. Soc. 1888.
- Malacosoma deformicornis*, p. 213, *procerum*, p. 214, *nigri ventre*, p. 215, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, n. spp.
- Aethonea*, Baly, characters and position of; *Ootheca serricornis*, Th., referred to it; JACOBY, Tr. E. Soc. 1888, p. 198.
- A. variabilis*, W. Africa, JACOBY, Tr. E. Soc. 1888, p. 199, pl. vii, figs. 14 & 15, n. sp.
- Schematizella*, n. g., for *S. viridis*, n. sp., Cameroons, pl. vii, fig. 11, JACOBY, Tr. E. Soc. 1888, p. 203.
- Agelocera chinensis*, Kiangai, FAIRMAIRE, p. 43, Ann. Ent. Belg. xxxii, n. sp.
- Ootheca cyaneovittata*, Fairm., generic position queried; JACOBY, Tr. E. Soc. 1888, p. 205.
- Aldrisma*, n. g. (*Mimastrites*), for *A. externecostata*, n. sp., Pekin; FAIRMAIRE, p. 156, Rev. d'Ent. vii.
- Cneorane rufocerulea*, Tonkin, FAIRMAIRE, p. 374, Ann. Soc. Ent. Fr. (6) viii; *C. femoralis*, China, JACOBY, P. Z. S. 1888, p. 350; *C. cribratissima*, *subcervulascens*, p. 44, *de la touchii*, *curiosipennis*, p. 45, China, FAIRMAIRE, Ann. Ent. Belg. xxxii; *C. nigricornis*, pl. xxxiv, fig. 9, p. 604, *mexicana*, fig. 10, & p. 605, Mexico, JACOBY, Biol. Centr. Am. Col. vi (1); n. spp.
- Malaxioides*, n. g., near *Apophyllia*, for *M. grandicornis*, n. sp., Pekin; FAIRMAIRE, Rev. d'Ent. vii, p. 155.
- Apophyllia smaragdipennis*, S. Africa, JACOBY, Tr. E. Soc. 1888, p. 204, pl. vii, fig. 13, n. sp.
- Metacoryna*, n. g., p. 605, for *M. fulvicollis*, pl. xxxiii, fig. 3, p. 605, *fulripes*, pl. xxxiv, fig. 11, Mexico, and *guatemalensis*, Guatemala, p. 606, n. spp.; JACOBY, Biol. Centr. Am. Col. vi (1).
- Scelida viridis*, Jac., fig. 12, *elegans*, Chap., fig. 15, figured, pl. xxxiv; JACOBY, Biol. Centr. Am. Col. vi (1).
- S. antennata*, pl. xxxiv, fig. 13, *glabrata*, fig. 14, *rugosa*, pl. xxxiii, fig. 8, p. 607, *metallica*, fig. 10, Mexico, *bella*, Panama, fig. 9, p. 608, JACOBY, Biol. Centr. Am. Col. vi (1).
- Scelidopsis*, n. g., for *S. rufofemorata*, Mexico, *subcostata*, pl. xxxiii, fig. 2, Panama, p. 609, *guatemalensis*, Guatemala, p. 610, n. spp.; JACOBY, Biol. Centr. Am. Col. vi (1).
- Chthoneis dilaticornis*, Guatemala, pl. xxxiii, fig. 24, JACOBY, p. 611, Biol. Centr. Am. Col. vi (1), n. sp.
- Miraces*, n. g., for *M. æneipennis*, n. sp., Guatemala, pl. xxxiv, fig. 16; JACOBY, p. 611, Biol. Centr. Am. Col. vi (1).
- Hecateus*, n. g., for *H. nigricollis*, n. sp., Panama, pl. xxxiii, fig. 23; JACOBY, p. 612, Biol. Centr. Am. Col. vi (1).
- Elyces*, n. g., p. 612, for the following new species: *nigromaculatus*, pl. xxxiii, fig. 5, *quadrimaculatus*, fig. 6, *obscurorittatus*, p. 613, Panama, *nigripennis*, Guatemala, p. 614; JACOBY, Biol. Centr. Am. Col. vi (1).
- Masurius*, n. g., p. 614, for the following n. spp.: *violaceipennis*, *bifas-*

ciatus, pl. xxxiv, fig. 17, Panama, *flavicollis*, Guatemala, p. 615; JACOBY, Biol. Centr. Am. Col. vi (1).

Cerotoma salcini, figured, pl. xxxiv, fig. 18, discussed, p. 617; JACOBY, Biol. Centr. Am. Col. vi (1).

C. dilatipes, Mexico, pl. xxxiv, fig. 19, p. 617, *rogersi*, Costa Rica, fig. 20 & p. 618, JACOBY, Biol. Centr. Am. Col. vi (1), n. spp.

Luperocnemus, n. g., for *L. xanthoderus*, n. sp., China; FAIRMAIRE, p. 43, Ann. Ent. Belg. xxxii.

Malacorrhinus sericeus, *biplagiatus*, pl. xxxiii, fig. 20, p. 585, *basalis*, Centr. America, *sevpunctatus*, fig. 21, Panama, p. 586, *guatemalensis*, *apicalis*, Guatemala, *fulvicornis*, Panama, p. 587, *godmani*, *semifasciatus*, Guatemala, *tricolor*, Brit. Honduras, p. 588, *scutellatus*, *dilataticornis*, fig. 22, p. 589, *reticulatus*, fig. 17, *centromaculatus*, Mexico, p. 590, JACOBY, Biol. Centr. Am. Col. vi (1), n. spp.

Luperodes nigripennis, Motsch., note on; JACOBY, P. Z. S. 1888, p. 350.

L. brasiliensis, Blumenau, JACOBY, Notes Leyd. Mus. x, p. 156; *L. apicalis*, Guatemala, *melanocephalus*, *biannularis*, p. 591, *apicicornis*, *dimidiaticornis*, Panama, *nigricornis*, Guatemala, p. 592, *fulco-fasciatus*, Mexico, *humeralis*, Guatemala, *sallai*, p. 593, *impressicollis*, Mexico, *minutus*, Panama, p. 594, *metallicus*, Guatemala, p. 595, JACOBY, Biol. Centr. Am. Col. vi (1) : n. spp.

Luperus morrisoni, N. Sonora, p. 595, *rugosus*, p. 596, *parvulus*, *subcostatus*, p. 597, *subglabratus*, *punctellus*, Mexico, *albomarginatus*, Guatemala, p. 598, *dissimilis*, Mexico, *modestus*, Panama, p. 599, *flavofemoratus*, Guatemala, p. 600, JACOBY, Biol. Centr. Am. Col. vi (1), n. spp.

Orates, n. g., for *O. flavicollis*, n. sp., Centr. America, pl. xxxiii, fig. 4; JACOBY, p. 600, Biol. Centr. Am. Col. vi (1).

Metacycla marginata, Chap., figured, pl. xxxiv, figs. 1 & 2; JACOBY, Biol. Centr. Am. Col. vi (1).

M. cæruleipennis, Mexico, pl. xxxiv, fig. 3, p. 601, *robusta*, Centr. America, fig. 4 & p. 602, JACOBY, Biol. Centr. Am. Col. vi (1), n. spp.

Platymorpha, n. g., p. 602, for *P. variegata*, n. sp., pl. xxxiv, fig. 5, Mexico and Guatemala, p. 603, and including *Chthoneis smaragdipennis*, Jac., pl. xxxiv, fig. 6; JACOBY, Biol. Centr. Am. Col. vi (1).

Pteleon, n. g., p. 603, for *P. semicæruleus*, n. sp., Mexico, pl. xxxiv, figs. 7 & 8, p. 604; JACOBY, Biol. Centr. Am. Col. vi (1).

Galerucella vageplicata, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 154, n. sp.

Leptocena, n. g., for *L. eximea*, n. sp., Andaman Is., BALY, p. 186, J. L. S. xx.

Alphidia, Clk., = (*Hovalia*, Fairm.) ; JACOBY, Tr. E. Soc. 1888, p. 205.

Charidea, n. g., near *Galerucella*, p. 157, for *Galeruca punctatostriata*, Motsch., = (*multicostata*, Jac.), and *C. fortunei*, n. sp., China, p. 158; BALY, J. L. S. xx.

Platyrantha chypeata, Andaman Is., BALY, p. 158, J. L. S. xx, n. sp.

Ænidea pallipes, Fabr., redescribed; BALY, J. L. S. xx, p. 161.

Ænidea cæruleipennis, Borneo, p. 159, *jacobyi*, Penang, &c., p. 160, BALY, J. L. S. xx, n. spp.

Cynorta ocellata, Malacca, p. 161, *apicipennis*, *facialis*, Sarawak, p. 162, BALY, J. L. S. xx, n. spp.

Mesodonts submetallica, Contr. Africa, JACOBY, Tr. E. Soc. 1888, pl. vii, fig. 10, p. 200, n. sp.

Pachyloma quedenfeldti, *truncata*, *mechowi*, W. Africa, WEISE, Deutsche z. Z. xxxii, p. 112, n. spp.

Adimonia (sub *Galerucella*) *punctatostriata*, Motsch., = (*multicostata*, Jac.); JACOBY, P. Z. S. 1888, p. 351.

A. pallidicollis, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 217, n. sp.

Olacilus, n. g. (*Galerucinae*), p. 203, for *O. fulvus*, n. sp., p. 201, Madagascar, JACOBY, Tr. E. Soc. 1888.

Spilocephalus, n. g. (*Galerucinae*), p. 201, for *S. viridipennis*, n. sp., S. Africa, p. 202, pl. vii, fig. 12; JACOBY, Tr. E. Soc. 1888.

Tropidophora tripartita, Th., = (*Physoma dohrni*, Chap.); JACOBY, Tr. E. Soc. 1888, p. 205.

Menippus canellinus, Tonkin, FAIRMAIRE, p. 374, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Galerucida tenuefusciata, *nigropicta*, p. 40, *nigrimembris*, p. 41, China, FAIRMAIRE, Ann. Ent. Belg. xxxii, n. spp.

Monolepta, characters of the genus and its allies, p. 163; *M. hamorrhoidalis*, F., p. 164, *terminata*, Guer., p. 166, redescribed: BALY, J. L. S. xx.

M. tricolor, S. Africa, FAIRMAIRE, p. 202, Ann. Soc. Ent. Fr. (6) viii; *M. baeri*, fig. 1, *puncticollis*, fig. 2, p. 260, Philippines, *molauensis*, Halmahera, fig. 1, *albiventris*, Madagascar, fig. 2, *vulgaris*, Zanzibar, fig. 3, p. 270, *thomsoni*, Old Calabar, *elegans*, fig. 1, *dichrou*, fig. 2, Senegal, *minima*, India, fig. 3, p. 286, ALLARD, Le Nat. (2) ii; *M. cumingii*, Philippines, *foveicollis*, Batchian, p. 165, *wallacei*, Celebes, p. 166, *verticalis*, Malay Arch. p. 167, BALY, J. L. S. xx; *M. irazuensis*, pl. xxxiv, fig. 21, Costa Rica, *unipunctata*, p. 619, *bipunctata*, Guatemala, *elongata*, Mexico, *chiriquensis*, Panama, p. 620, *subrugosa*, *imitans*, fig. 22, Centr. America, p. 621, *panamensis*, fig. 23, Chiriqui, *fulvomaculata*, Mexico, *triplagiata*, Guatemala, p. 622, *violacea*, *cæruleipennis*, *velutina*, fig. 24, *abdominalis*, Mexico, p. 623, *brunnea*, *championi*, Panama, *hondurensis*, Honduras, p. 624, *bipunctata*, Panama, fig. 25, p. 625, JACOBY, Biol. Centr. Am. Col. vi (1) : n. spp.

Eustetha thoracica, Kiu Kiang, JACOBY, P. Z. S. 1888, p. 348; *E. serri-cornis*, p. 41, *micans*, *puncticollis*, p. 42, Moupin, FAIRMAIRE, Ann. Ent. Belg. xxxii : n. spp.

Laphris emarginata, Baly, ♂ noticed; JACOBY, P. Z. S. 1888, p. 351.

Hispides.

Leptispa pygmaea, Baly, habits; LEWIS, Ent. M. M. xxv, p. 94.

Callispa pallida, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 130; *C. minor*, Tenasserim, *id. t. c.* p. 175; *C. fœæ*, Burma, BALY, p. 654, Ann. Mus. Genov. (2) vi : n. spp.

Gonophora masoni, Andaman Is., BALY, Ent. M. M. xxv, p. 85; G.

maculigera, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 131 ; *G. inmaculata*, p. 175, *pulchella*, p. 176, Burma, *id. t. c.* : n. spp.

Platypria digitata, Burma, GESTRO, Ann. Mus. Genov. (2) vi, p. 178, n. sp.

Hispa femorata, Tonkin, FAIRMAIRE, p. 376, Ann. Soc. Ent. Fr. (6) viii ; *H. discoidalis*, *abdominalis*, p. 664, *reticulata*, p. 665, Burma, BALY, Ann. Mus. Genov. (2) vi ; *H. singularis*, p. 179, *albopilosa*, p. 181, *delicatula*, p. 182, *fea*, p. 183, Burma, GESTRO, Ann. Mus. Genov. (2) vi : n. spp.

Anisodera fraterna, p. 655, *gestroi*, p. 656, *propinqua*, p. 657, *fea*, p. 658, Burma, BALY, Ann. Mus. Genov. (2) vi, n. spp.

Downesia basalis, Bhamo, BALY, p. 662, Ann. Mus. Genov. (2) vi, n. sp.

Hanoia, n. g., near *Downesia*, for *H. auberti*, n. sp., HANOÏ, FAIRMAIRE, p. 375, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Monochirus mæstus, Bhamo, BALY, p. 662, Ann. Mus. Genov. (2) vi, n. sp.

Calanomenodera campestris, Madagascar, FAIRMAIRE, Le Nat. (2) i, p. 72, fig. 8, n. sp.

Cassidides.

Prioptera trabeata, China, FAIRMAIRE, p. 46, Ann. Ent. Belg. xxxii, n. sp.

Cassida gibbosula, Mesopotamia, KRAATZ, Deutsche o. Z. xxxii, p. 77 ; *C. nigrostriata*, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 157 : n. spp.

LANGURIIDÆ.

[*Cf.* FAIRMAIRE (243), FOWLER (283), QUEDENFELDT (694).]

Languria mozardi, larval habits ; WEBSTER, Ins. Life, i, p. 119, fig. 23.

L. calcaroides, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 217 ; *L. analis*, p. 376, *æreipennis*, *micantipennis*, p. 377, Tonkin, FAIRMAIRE, Ann. Soc. Ent. Fr. (6) viii ; *L. vandepolli*, Queensland, FOWLER, Notes Leyd. Mus. x, p. 159 : n. spp.

EROTYLIDÆ.

[*Cf.* GORHAM (319, 322), QUEDENFELDT (694).]

Encaustes hageni, p. 133, pl. vii, fig. 1, *sulcata*, p. 134, fig. 2, Sumatra, *ceramensis*, Ceram, p. 135, fig. 3, GORHAM, Notes Leyd. Mus. x, n. spp.

Micrencaustes metallica, p. 136, *serguttata*, p. 137, pl. vii, fig. 4, Sumatra, *eximia*, Borneo, p. 138, fig. 51, GORHAM, Notes Leyd. Mus. x, n. spp.

Epis. apha octopustulata, Gorh., referred to *Micrencaustes* ; GORHAM, Notes Leyd. Mus. x, p. 139.

Episcaphula andamanensis, Andaman Is., p. 141, *aruensis*, Aru Is., p. 143, *E. ? corallipes*, pl. vii, fig. 7, Amboyna, p. 142, GORHAM, Notes Leyd. Mus. x, n. spp.

Euzostria, n. g., p. 139, for *E. aruensis*, n. sp., Aru Is., p. 140, pl. vii, fig. 6 ; GORHAM, Notes Leyd. Mus. x.

Coptengis, characters of ; GORHAM, Notes Leyd. Mus. x, p. 140.

Mycotretes maculatus, Ol., pl. iv, fig. 1, *pallidior*, Cr., pl. ii, fig. 18, = (*nigrotinctus*, Cr.), p. 52, *bistrigatus*, Lac., var., pl. iii, fig. 11, *sallei*, pl. iv, fig. 2, *illustris*, Cr., pl. iii, fig. 15, *pecari*, Lac., figs. 18 & 19, *lesueuri*, pl. iii, fig. 20, *fuscitarsis*, Lac., fig. 25, figured, and other species noticed ; GORHAM, Biol. Centr. Am. Col. vii.

M. interstictus, Nicaragua, *geminus*, pl. iii, fig. 10, *sexpunctatus*, fig. 12, Panama, p. 50, *normalis*, *ternotatus*, fig. 13, Mexico, p. 51, *spadiceus*, figs. 16 & 17, Centr. America, p. 53, *panamanus*, fig. 14, Bugaba, *sandicatus*, p. 54, *elegans*, pl. iv, fig. 3, p. 55, Guatemala, *tibialis*, Nicaragua, *pictopiceus*, Panama, p. 56, *vittatus*, Guatemala, pl. iii, fig. 21, *alternans*, *laccophilinus*, pl. iv, fig. 5, p. 57, *bipunctatus*, *stramineus*, *luteolus*, p. 58, Panama, *cruentus*, pl. iii, fig. 22, *hirudo*, Guatemala, p. 59, *cogrotus*, Costa Rica, p. 60, *consanguineus*, Centr. America, pl. iii, fig. 23, *hæmaticus*, Costa Rica, p. 61, *incarnatus*, Centr. America, *rubidus*, Guatemala, p. 62, *coccidulinus*, fig. 24, Centr. America, *crudus*, Mexico, p. 63, *cribratus*, Centr. America, *nigripes*, Guatemala, p. 64, *noterinus*, p. 65, *planus*, *atricaudatus*, pl. iv, fig. 4, *melanotus*, p. 66, *cercyonoides*, *brevis*, p. 67, *hemapterus*, Panama, *rufipennis*, *epopterus*, pl. iv, fig. 7, Mexico, *oppositipunctum*, fig. 6, Guatemala, p. 69, *nigricollis*, Mexico, *badius*, Guatemala, p. 71, GORHAM, Biol. Centr. Am. Col. vii, n. spp.

Mycomytes, n. g., for *M. ferrugineus*, n. sp., Mexico, pl. iv, fig. 8, GORHAM, p. 71, Biol. Centr. Am. Col. vii.

Paratritoma, n. g., p. 71, for the following n. spp. : *dimidiata*, Mexico, *dirisa*, pl. iv, figs. 9-11, Centr. America, p. 72, *caduca*, fig. 12, *rivida*, Guatemala, p. 73; also *Mycotretes triplacoides*, Cr., and some other species ; GORHAM, Biol. Centr. Am. Col. vii.

Mycophthorus pauperculus, Lac., figured, pl. iv, fig. 13, described, p. 74 ; GORHAM, Biol. Centr. Am. Col. vii.

Pseudolybas, n. g., for *P. glaber*, pl. iv, fig. 14, p. 74, *vernatus*, p. 75, n. spp., Panama ; GORHAM, Biol. Centr. Am. Col. vii.

Lybas granatus, fig. 15, *carbunculus*, Lac., fig. 16, figured, pl. iv ; GORHAM, Biol. Centr. Am. Col. vii.

L. interpunctatus, Mexico, *anisotomoides*, Panama, GORHAM, p. 76, Biol. Centr. Am. Col. vii.

Lybanodes, n. g., for *L. castaneus*, n. sp., Nicaragua, pl. iv, fig. 17 ; GORHAM, p. 77, Biol. Centr. Am. Col. vii.

Palæolybas dorsalis, Liberia, GORHAM, Notes Leyd. Mus. x, p. 144, pl. vii, fig. 8, n. sp.

Amblyscelis, n. g., p. 144, for the African species of *Amblyopus*, and *A. kelleni*, p. 145, *pallidus*, p. 146, W. Africa, n. spp. ; GORHAM, Notes Leyd. Mus. x.

Triplax marginata, Centr. Africa, QUEDENFELDT, B. E. Z. xxxii, p. 218 ; *T. hügeri*, Mexico, *championi*, pl. iv, fig. 18, p. 78, *mesomelas*, Centr. America, *rediviva*, Guatemala, fig. 19, p. 79 ; GORHAM, Biol. Centr. Am. Col. vii : n. spp.

Tritoma, the characters of the genus noticed ; GORHAM, Biol. Centr. Am. Col. vii, p. 80.

T. dorsalis, Panama, pl. iv, fig. 20, p. 80, GORHAM, Biol. Centr.

Am. Col. vii; *T. liberiana*, Liberia, *id.* Notes Leyd. Mus. x, p. 146: n. spp.

Hæmatochiton, n. g., for *H. elateroides*, n. sp., Mexico, pl. v, fig. 4; GORHAM, p. 81, Biol. Centr. Am. Col. vii.

Secoother, n. g., for *S. carbonarius*, n. sp., Mexico, pl. v, fig. 5; GORHAM, p. 82, Biol. Centr. Am. Col. vii.

Scaphengis, n. g., p. 82, for *S. picipes*, n. sp., Mexico, p. 83, pl. v, fig. 6; GORHAM, Biol. Centr. Am. Col. vii.

Coccimorphus emys, Lac., figured, pl. iv, fig. 21; Biol. Centr. Am. Col. vii.

Ægithus cardinalis, Chev., pl. iv, fig. 23, *rufipennis*, Cr., fig. 24, *meridionalis*, Cr., fig. 25, note on its characters and synonymy, p. 87; *jansoni*, pl. v, fig. 1, figured; GORHAM, Biol. Centr. Am. Col. vii.

Æ. melaspis, pl. iv, fig. 22, p. 85, *politus*, p. 86, Centr. America, *discoideus*, pl. v, fig. 2, p. 88, Costa Rica, *högei*, Mexico, *duplicatus*, Centr. America, p. 89, *strigicollis*, *dubius*, Panama, p. 90, *stillatus*, Mexico, *grammicus*, Guatemala, pl. v, fig. 3, p. 91, GORHAM, Biol. Centr. Am. Col. vii, n. spp.

Brachysphenus delineatus, Lac., pl. v, figs. 7 & 8, *catillifer*, Cr., figs. 10 & 11, *sedecim-maculatus*, fig. 13, *festivus*, Lac., fig. 14, figured; GORHAM, Biol. Centr. Am. Col. vii.

B. pulcher, pl. v, fig. 9, *dilectus*, Panama, p. 93, *nuculus*, Mexico, *cereus*, Panama, p. 94, *exiguenotatus*, Centr. America, *brevicollis*, p. 95, *striatipennis*, *pallidipennis*, p. 96, Panama, *jejunus*, Mexico, *conspicillatus*, pl. v, fig. 12, Costa Rica, *fulviventris*, Guatemala, p. 97, *scutellaris*, Centr. America, p. 98, *melanopus*, Panama, *fragmentatus*, pl. v, fig. 16, Guatemala, p. 99, *multiguttatus*, Mexico, pl. v, fig. 15, p. 100, GORHAM, Biol. Centr. Am. Col. vii, n. spp.

Aulacochilus crucis-melitæ, Sumatra, &c., GORHAM, p. 150, pl. vii, fig. 11, Notes Leyd. Mus. x, n. sp.

Erotylus leopardus, Lac., figs. 17-20, *nicaraguæ*, Cr., fig. 21, figured, pl. v; Biol. Centr. Am. Col. vii.

E. nigronotatus, Panama, pl. vi, fig. 1, p. 102, GORHAM, Biol. Centr. Am. Col. vii, n. sp.

Cypherotylus debaurei, Dem., pl. vi, figs. 2 & 2a, *gibbosus*, L., figs. 3 & 3a, *elevatus*, Fab., figs. 4 & 4a, *impressopunctatus*, Cr., fig. 5, *vicinus*, Guer., pl. v, fig. 24, *guatemalæ*, Cr., pl. vi, fig. 6, *boisduræi*, Chev., pl. v, fig. 23, figured; GORHAM, Biol. Centr. Am. Col. vii.

C. patellatus, *anthracinus*, p. 104, Peru, *costaricensis*, Costa Rica, pl. vi, fig. vii, p. 105, *gaumeri*, Yucatan, fig. 8, p. 106, *alutaceus*, fig. 10, *fenestratus*, pl. v, fig. 22, p. 107, *aspersus*, pl. vi, fig. 9, p. 108, Mexico, GORHAM, Biol. Centr. Am. Col. vii, n. spp.

Micrerotylus lunulatus, Ol., figured, pl. vi, fig. 13, GORHAM, Biol. Centr. Am. Col. vii.

Zonarius cacticus, Lac., fig. 14, *jansoni*, Cr., figs. 15 & 16, figured, pl. vi; GORHAM, Biol. Centr. Am. Col. vii.

Scaphidomorphus bosci, Guer., figured, pl. vi, fig. 11, GORHAM, Biol. Centr. Am. Col. vii.

Prepopharus duponcheli, Chevr., figs. 17 & 18, *xanthomelus*, Cr., fig. 12, figured, pl. vi; GORHAM, Biol. Centr. Am. Col. vii.

P. epilotus, Panama, pl. vi, fig. 19, p. 111, GORHAM, Biol. Contr. Am. C. l. vii, n. sp.

Priotelus apiatius, Chevr., figured, pl. vi, fig. 20; GORHAM, Biol. Contr. Am. Col. vii.

Tritomidea, Motsch., noticed, p. 129, and *T. atripennis*, p. 147; GORHAM, Notes Leyd. Mus. x.

Pseudotritoma, n. g., p. 147, for *Tritomidea* (?) *nigrocruciata*, Crotch, and *P. pulchra*, Sumatra, n. sp., p. 148, pl. vii, fig. 9; GORHAM, Notes Leyd. Mus. x.

Phoxogenys, n. g., p. 148, for *P. mülleri*, n. sp., Java, p. 149, pl. vii, fig. 10; GORHAM, Notes Leyd. Mus. x.

ENDOMYCHIDÆ.

[Cf. FAIRMAIRE (242, 243), GORHAM (323), ORMAY (643), REITTER (724, 727, 730).]

Stenotarsus maculosus, Pekin, FAIRMAIRE, Rev. d'Ent. vii, p. 158, n. sp.

Endomychus coccineus, n. var. *biehli*; REITTER, Deutsche e. Z. xxxii, p. 424.

Panomœa sumatrensis, E. Sumatra; GORHAM, Notes Leyd. Mus. x, p. 152.

Saula fuscicornis, Annam, FAIRMAIRE, p. 378, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Ilybopterus plagiatcollis, Fairm., = (*Cymones sharpi*, Gorb.); FAIRMAIRE, p. clxxv, Bull. Soc. Ent. Fr. (6) viii.

Alexia, table of the European species; REITTER, Wien. ent. Z. vii, pp. 322–326, with *A. scymnoides*, Eubœa, p. 324, ? n. sp.

A. reitteri, Transsylvania, ORMAY, Wien. ent. Z. vii, p. 166; *A. circassica*, *lederi*, p. 169, *clunboides*, p. 170, Circassia, REITTER, Wien. ent. Z. vii : n. spp.

Leistes, cf. *Colydiide*.

COCCINELLIDÆ.

[Cf. COLENZO (158), COSTA (164), WEISE (921).]

Coccinella labilis, habits; MORRIS, Ent. M. M. xxv, p. 36. *C. 5-punctata*, L., n. var. *elberti*; FLACH, Wien. ent. Z. vii, p. 298.

C. novæ-zealandiæ, N. Zealand, COLENZO, Tr. N. Z. Inst. xx, p. 40, n. sp.

Adalia rufescens, Muls., note on, with n. var. *bifasciata*; WEISE, Deutsche e. Z. xxxii, p. 94.

A. miniata, Congo, p. 95, *pipitzi*, Madagascar, p. 96, WEISE, Deutsche e. Z. xxxii, n. spp.

Megilla maculata, parasite of; RILEY, Ins. Life, i, pp. 101–104, figs. 14 & 15.

Cydonia lunata, F., varietal note: WEISE, Deutsche e. Z. xxxii, p. 87.

Epilachna chrysomelina, F., *murrayi*, Cr., p. 81, *hirta*, Thunb., p. 83, *chenoni*, Muls., *raptor*, Cr., p. 84, varietal and synonymical remarks on; WEISE, Deutsche e. Z. xxxii.

E. villica, W. Africa, p. 82, *dohrni*, Madagascar, p. 85, *tibialis*, W. Africa, p. 86, WEISE, Deutsche e. Z. xxxii, n. spp.

Caria decanpustulata, Ashanti, WEISE, Deutsche e. Z. xxxii, p. 87, n. sp.

Ortalia, characters of; WEISE, Deutsche e. Z. xxxii, p. 92.

O. punctata, p. 89, *oculata*, p. 93, *egena*, p. 91, W. Africa, WEISE, Deutsche e. Z. xxxii, n. spp.

Platynapsis bimaculata, Quango, p. 92, *rufipennis*, Zanzibar, p. 93, WEISE, Deutsche e. Z. xxxii, n. spp.

Chilocorus quadriguttatus, Natal, WEISE, Deutsche e. Z. xxxii, p. 93, n. sp.

Seymnus zigzag, Sardinia and Egypt, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 87, n. sp.

Lithophilus, cf. *Colydii* lae.

CORYLOPHIDÆ.

[Cf. MATTHEWS (319).]

The characters of the family fully given; divided into four tribes—*Sericoderina*, *Saciina*, *Corylophina*, *Orthoperina*; MATTHEWS, Biol. Centr. Am. Col. ii (1) pp. 102 & 103.

Enigmaticum, n. g., p. 104, for *Æ. ptilioides*, n. sp., Guatemala, p. 105, pl. iii, figs. 13 & 13a; MATTHEWS, Biol. Centr. Am. Col. ii (1).

Ectinocephalus, n. g., p. 105, for *E. tropicus*, n. sp., Guatemala, p. 105, pl. iii, figs. 16 & 16a; MATTHEWS, Biol. Centr. Am. Col. ii (1).

Conodes, n. g., p. 107, for *C. conicus*, n. sp., Guatemala, p. 108, pl. iii, figs. 17 & 17a; MATTHEWS, Biol. Centr. Am. Col. ii (1).

Sacium incertum, Panama, *latifasciatum*, p. 110, *mexicanum*, p. 111, *collare*, Mexico, *marginatum*, p. 112, *laticolle*, p. 113, Guatemala, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

Arthrolips dimidiatus, Panama, p. 114, *ovatus*, Mexico, p. 115, *niger*, Panama, *hirsutus*, Centr. America, pl. iii, fig. 18, p. 116, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

Sericoderus latus, Europe and Guatemala, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. sp.

Micröum, n. g., p. 118, for *M. ovoformis*, n. sp., Guatemala, p. 119; MATTHEWS, Biol. Centr. Am. Col. ii (1).

Corylophodes jansoni, Nicaragua, *championi*, pl. iii, figs. 19 & 19a-c, p. 120, *torquatus*, *castaneus*, p. 121, Guatemala, *orbicularis*, Brit. Hon. l. p. 122, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

Orthoperus ovalis, Mexico, *nigricans*, p. 123, *ovatus*, Guatemala, *perpusillus*, Mexico, p. 124, MATTHEWS, Biol. Centr. Am. Col. ii (1), n. spp.

Rhyppobius guatemalensis, Guatemala, MATTHEWS, p. 125. Biol. Centr. Am. Col. (3) i, n. sp.

(B.) HYMENOPTERA.

Classification ; ASHMEAD, P. E. Soc. Wash. i, pp. 96-100.

Structure of terminal stigma ; CARLET (135).—Structure of the leg in *Hymenoptera* ; COOK (162).

ACULEATA.

[Cf. ANDRÉ (5, 6, 10), ARNOLD (14), AURIVILLIUS (30), BORRIES (90), BOS (91), CAMERON (128, 319), CARLET (133, 134), COSTA (164, 165, 166), EMERY (230, 231), FOREL (280, 281), FRIESE (288), HANDLIRSCH (366, 367, 368), HENSCHEL (371), HOLMBERG (382, 383), KIRBY (439), KOHL (442, 443, 444), KRONFELD (477), LUBBOCK (527), MACFARLAND (543), MEUNIER (589, 590, 591, 592, 593, 594, 595), MOCSÁRY (609), MORAWITZ (613), MÜHLEN (620), NICOLAS (624, 625), PALUMBO (654), PECKHAM (663), PROVANCHER (686), RADOSZKOWSKI (699, 700, 701), REUTER (737), SAUNDERS (789), SCHIMPER (801), SHIPLEY (839), TRYON (888), WASMANN (912).]

Mechanism of sting in *Mellifera*, and nature of poison in "*Philanthus*, *Pompilus*, &c." ; CARLET (133). Supplementary part of sting ; *id.* (133).

APIDE.

Nomada, list of species and their hosts ; FRIESE, Zool. Jahrb. iii, Syst. Abth. pp. 861-867.

N. pulchra, Russia, ARNOLD, p. 202, pl. xi, figs. 4-7, Hor. Ent. Ross. xxii ; *N. palmeni*, p. 253, *hammarstroemi*, p. 254, *ecarinata*, p. 257, Siberia, *fasciculata*, Semipalatinsk, p. 259, MORAWITZ, Hor. Ent. Ross. xxii ; *N. flavipes*, p. 426, *rubra*, p. 427, California, PROVANCHER, Add. Hym. Queb. : n. spp.

Epeolus, list of species and their hosts ; FRIESE, Zool. Jahrb. iii, Syst. Abth. pp. 859 & 860.

E. minutus, Orenburg, RADOSZKOWSKI, p. 336, Hor. Ent. Ross. xxii ; *E. pilosulus*, Canada, PROVANCHER, p. 426, Add. Hym. Queb. : n. spp.

Ammobates, Latr. : list of species and their hosts ; FRIESE, Zool. Jahrb. iii, Syst. Abth. p. 859.

Phiarus abdominalis, Ev., habits of ; FRIESE, Zool. Jahrb. iii, Syst. Abth. p. 859.

Epeoloides cæcutiens, Fab., habits ; FRIESE, Zool. Jahrb. iii, Syst. Abth. p. 860.

Pasites maculatus and *minutus*, habits ; FRIESE, Zool. Jahrb. iii, Syst. Abth. p. 860.

Phileremnus punctatus and *truncatus*, habits ; FRIESE, Zool. Jahrb. iii, Syst. Abth. p. 861.

Bialetes brevicornis, Panz., habits ; FRIESE, Zool. Jahrb. iii, Syst. Abth. p. 861.

Melecta, list of species and their hosts ; FRIESE, Zool. Jahrb. iii, Syst. Abth. pp. 867 & 868.

Stelis, list of species and their hosts ; FRIESE, Zool. Jahrb. iii, Syst. Abth. pp. 855-857.

S. leucostoma, Sardinia, COSTA, Atti Acc. Napoli (2) i p. 96, n. sp.

Crocisca, hosts of the species ; FRIESE, Zool. Jahrb. iii, p. 868.

C. biseriata, Siberia, MORAWITZ, p. 252, Hor. Ent. Ross. xxii, n. sp.

Osmia adunca and *cementaria*, nests noticed ; RÜDOW, Soc. Ent. iii, p. 106. *O. rufohirta*, Lep., nest of ; *id. t. c.* p. 59. *O. fulvicentris*, nest noticed ; *id. op. cit.* ii, p. 156.

O. atriventris, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 95 ; *O. (Chalcosmia) laterofasciata*, *O. (Ctenosmia) bihamata*, Sardinia, COSTA, *op. cit.* No. 13, p. 20 ; *O. melanota*, p. 243, *transcaspica*, p. 245, Transcaspian region, MORAWITZ, Hor. Ent. Ross. xxii ; *O. spoliata*, p. 327, *tarsata*, p. 328, N. America, PROVANCHER, Add. Hym. Queb. : n. spp.

Macrocera morawitzi, Askhabad, RADOSZKOWSKI, p. 338, Hor. Ent. Ross. xxii, n. sp.

Caelioxys, list of species and their hosts ; FRIESE, Zool. Jahrb. iii, Syst. Abth. pp. 857 & 858.

C. tenax, p. 118, *laudabilis*, p. 120, *alacris*, p. 122, *litoralis*, p. 124, *missionum*, p. 126, *angustivalva*, p. 130, *remissa*, p. 131, Argentine Republic, HOLMBERG, An. Soc. Arg. xxvi, n. spp.

Heriades maculatum, Vancouver, PROVANCHER, p. 323, Add. Hym. Queb. ; *H. alboscopatum, plenum*, Canada, *id. t. c.* p. 425 : n. spp.

Chelostoma, Heriades, and *Gyrodoma*, synonymical discussion ; THOMSON, Opusc. ent. xii, pp. 1217 & 1218. *O. maxillosum*, L., nest noticed ; RÜDOW, Soc. Ent. ii, p. 155.

Trypetes truncorum, nest noticed ; RÜDOW, Soc. Ent. ii, p. 155.

Anthidium oblongatum, nests of ; RÜDOW, Soc. Ent. iii, p. 49.

A. rufispinum, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 96 ; *A. melanostomum, peregrinum*, Sardinia, *id. op. cit.* No. 13, p. 21 ; *A. anguliventre*, p. 248, *puncticolle*, p. 250, Transcaspian region, MORAWITZ, Hor. Ent. Ross. xxii : n. spp.

Megachile villosa, natural history notes on ; HENSCHKE, Ent. Nachr. xiv, pp. 321-323. *M. centuncularis*, &c., nests of ; ANDRÉ (10).

M. schmiedeknechtii, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 13, p. 21 ; *M. tecta*, Askhabad, RADOSZKOWSKI, p. 339, Hor. Ent. Ross. xxii ; *M. vancouveriensis*, N. America, PROVANCHER, p. 424, Add. Hym. Queb. : n. spp.

Pseudosmia tibiodentata, Askhabad, RADOSZKOWSKI, p. 340, Hor. Ent. Ross. xxii, n. sp.

Diorys, list of species and their hosts ; FRIESE, Zool. Jahrb. iii, Syst. Abth. p. 853.

D. mæsta, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 96 ; *D. albo-fusciata*, Askhabad, RADOSZKOWSKI, p. 340, Hor. Ent. Ross. xxii : n. spp.

Nomiodes, monograph of the genus ; HANDLIRSCH, Verh. z.-b. Wien, xxxviii, pp. 395-405, pl. x.

N. fullax, S. Europe, p. 401, pl. x, figs. 2 & 7, *pulverosa*, Turcomania, p. 404, fig. 1, *rotundiceps*, Egypt, p. 405, fig. 3, HANDLIRSCH, Verh. z.-b. Wien, xxxviii ; *N. pallida*, Askhabad, RADOSZKOWSKI, p. 341, Hor. Ent. Ross. xxii : n. spp.

Melissodes festonata, p. 300, *lata*, *nigricornis*, p. 302, N. America, PROVANCHER, Add. Hym. Queb., n. spp.

Tetralonia metallescens, p. 233, *pomeranzeri*, p. 235, Transcaspiian region, MORAWITZ, Hor. Ent. Ross. xxii, n. spp.

Anthophora nudata, n. n. for *Ceratina bidentata*, Prov. ; PROVANCHER, p. 336, Add. Hym. Queb. *A. furcata*, Pz., p. 10, *A. parietina*, F., p. 18, nests of ; RÜDOW, Soc. Ent. iii. *A. pilipes* and other species, habits in S. France ; NICOLAS, C.R. Ass. Sci. Fr. xvi, pt. 2, pp. 660 & 661.

A. procera, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 97 ; *A. testaceipes*, p. 225, *suworzevi*, p. 227, Semipalatinsk, *turcomanica*, Kiltit-schinar, p. 228, *trochanterica*, Askhabad, p. 230, *restita*, Turcomania, p. 232, MORAWITZ, Hor. Ent. Ross. xxii ; *A. subglobulosa*, N. America, PROVANCHER, p. 298, Add. Hym. Queb. : n. spp.

Hyleus plumicornis, *stirgulosus*, Sardinia, COSTA, p. 19, Atti Acc. Napoli (2) i, No. 13, n. spp.

Xylocopa minuta, Lep., nests of ; RÜDOW, Soc. Ent. iii, p. 49. *X. violacea*, habits ; NICOLAS, C.R. Ass. Sci. Fr. xvi, pt. 2, pp. 657-660.

Bombus : variability and distribution of ; HANDLIRSCH, SD. z.-b. Wien, xxxviii, pp. 34-36 : critical and synonymical notes on the palæarctic species, pp. 211-225 ; on the species of the Oriental region, pp. 225-228 ; of the nearctic and neotropical regions, pp. 228-246 ; HANDLIRSCH, Ann. Hofmuseum Wien, iii : RADOSZKOWSKI (699) revises his previous descriptions of the male organs, makes some changes in the nomenclature of their parts, and figures those of several species : table of the Belgian species and varieties ; MEUNIER (591) : prodromus ; MEUNIER (593). *B. sylvarum*, L., nest and larvæ noticed ; LUCAS, p. clxxxi, Bull. Soc. Ent. Fr. (6) viii.

B. serratiquama, Semipalatinsk, MORAWITZ, p. 224, Hor. Ent. Ross. xxii ; *B. simulatilis*, Erzeroum, p. 317, *tricornis*, p. 319, *jankowskii*, p. 320, Wladiwostok, *wolkonskii*, Daghestan, p. 322, RADOSZKOWSKI, Hor. Ent. Ross. xxii ; *B. flavipes*, E. India, p. 225, *dentatus*, India?, p. 227, *melaleucus*, Oriental region, p. 228, *haueri*, Orizaba, p. 231, *consanguineus*, Vancouver I., *steindachneri*, Brazil and Mexico, p. 239, *carbonarius*, S. America, p. 242, *nearcticus*, Brit. Columb., p. 243, *dolichocephalus*, *brachycephalus*, Mexico, p. 244, HANDLIRSCH, Ann. Hofmuseum Wien, iii ; *B. nigrocinctus*, California, PROVANCHER, p. 342, Add. Hym. Queb. : n. spp.

Apathus dorsalis, Ottawa, PROVANCHER, p. 343, Add. Hym. Queb., n. sp.

Psithyrus : list of the species, and notes on their hosts ; FRIESE, Zool. Jahrb. iii, Syst. Abth. p. 855 : the species of noticed seriatim ; HANDLIRSCH,

Ann. Hofmuseum Wien, iii, pp. 246-248: table of the Belgian species, with *P. campestris* n. var. *stefanii*; MEUNIER, Nat. Sicil. vii, p. 176: descriptions of the Belgian species; *id. op. cit.* viii, pp. 76-80.

Melipona, *Trigona*, *Tetragona*, habits, &c.; HOLMBERG (383).

M. trinidadensis, p. 344, *paupera*, p. 427, Trinidad, PROVANCHER, Add. Hym. Queb., n. spp.

Honeybee: diseases; control of reproduction; McLAIN, in Riley Rep. 1887, pp. 171-178.

Sphcodes ephippium and allies, nests noticed; RÜDOW, Soc. Ent. ii, p. 171.

Colletes marginata, ii, p. 156, *daviesanus*, Kb., iii, p. 90, nests noticed; RÜDOW, Soc. Ent.

C. dorsalis, Turkestan, MORAWITZ, p. 242, Hor. Ent. Ross. xxii; *C. hyalina*, Ottawa, PROVANCHER, p. 303, Add. Hym. Queb.: n. spp.

Halictus: structure of habitations of; NICOLAS, C.R. Ass. Sci. Fr. xvi, pt. 2, p. 662. *H. quadristrigatus*, *maculatus*, nests noticed; RÜDOW, Soc. Ent. iii, p. 91.

H. cinctipes, Ottawa, PROVANCHER, p. 316, Add. Hym. Queb., n. sp.

Andrena afzeliiella and allies, characters and synonymy of; PERKINS, Ent. M. M. xxv, pp. 128-130. *A. bimaculata*, Kir., var. described; COSTA, Atti Acc. Napoli (2) ii, No. 7, p. 23. *A. praecox*, ♀ with partly ♂ characters; DITTRICH (192).

A. uromelana, *hyalinella*, Italy, COSTA, Rend. Acc. Nap. (2) ii, p. 165; *A. ehnergi*, p. 239, *sibirica*, p. 239, *sahlbergi*, p. 241, Siberia, MORAWITZ, Hor. Ent. Ross. xxii; *A. laticeps*, *distans*, p. 307, *hirticincta*, p. 308, *lineata*, p. 309, *vestita*, p. 310, *convexa*, p. 311, *simulata*, *macilentata*, p. 313, N. America, PROVANCHER, Add. Hym. Queb.: n. spp.

Augochlora striata, p. 317, *obliqua*, p. 318, N. America, PROVANCHER, Add. Hym. Queb., n. spp.

Collopsis 4-lineata, p. 319, *interrupta*, p. 320, N. America, PROVANCHER, Add. Hym. Queb., n. spp.

Chelynia, n. g., for *C. lubiata*, n. sp., Ottawa; PROVANCHER, p. 322, Add. Hym. Queb.

Cilissa sibirica, Minussinsk, MORAWITZ, p. 237, Hor. Ent. Ross. xxii, n. sp.

Macropis longiligula, Canada, PROVANCHER, p. 424, Add. Hym. Queb., n. sp.

Nomia auracincta, ♀ described; COSTA, Atti Acc. Napoli (2) ii, No. 8, p. 36.

N. compacta, N. America, PROVANCHER, p. 337, Add. Hym. Queb., n. sp.

VESPIDÆ.

Odynerus murarius, L., p. 608, *bifasciatus*, L., p. 610, habits; AURI-VILLIUS, Gefv. Ak. Föhr. 1888.

O. (Leionotus) costae (André), COSTA, Atti Acc. Napoli (2) i, No. 9, p. 56 (n. sp. ?); *O. sinuatifasciatus*, Italy, COSTA, Rend. Acc. Nap. (2) ii, p. 104; *O. polyphemus*, Christmas I., KIRBY, P. Z. S. 1888, p. 551; *O. antillarum*, Trinidad, PROVANCHER, p. 420, Add. Hym. Queb.: n. spp.

Lionotus pubescens, Th., habits; AURIVILLIUS, Cefv. Ak Förh. 1888, p. 697.

Celonitis crenulatus, p. 267, *osseus*, p. 268, Transcaspian region, MORAWITZ, Hor. Ent. Ross. xxii, n. spp.

Jugurtia chlorotica, Transcaspian region, MORAWITZ, p. 270, Hor. Ent. Ross. xxii, n. sp.

Monobia bicolor, N. America, PROVANCHER, p. 420, Add. Hym. Queb., n. sp.

Eumenes pomiformis, Fab., biological notes on; PALUMBO (654).

E. tenuis, Transcaspian region, MORAWITZ, p. 261, Hor. Ent. Ross. xxii; *E. crucifera*, California, *impunctus*, p. 421, *cinctus*, *flavopectus*, p. 422, Trinidad, PROVANCHER, Add. Hym. Queb. : n. spp.

Catiloastenus, n. g. (presumably), p. 150, for *C. nigroriolacea*, n. sp. (?), Africa, p. 151; MEUNIER, Nat. Sicil. vii.

Stellenigris, n. g. (presumably), for *S. rautveldii*, n. sp. (?), Africa; MEUNIER, Nat. Sicil. vii, p. 152.

Eumenesiferus, n. g., with *E. brasiliensis*, n. sp., Brazil; MEUNIER, p. 300, Nat. Sicil. vii.

Pterochilus meridionalis, fully described. p. 5, figured, fig. 4; COSTA, Atti Acc. Napoli (2) i, No. 10.

Polistes balder, Christmas I., KIRBY, P. Z. S. 1838, p. 552; *P. anahcimensis*, California, PROVANCHER, p. 423, Add. Hym. Queb. : n. spp.

Vespa, table of N. American species; MACFARLAND, Tr. Am. Ent. Soc. xv, p. 297. *V. crabro*, nest destroyed by fox; DELABY, Bull. Soc. L. Nord. France, vii, pp. 201 & 202.

V. bistriata, *scoleska*, N. America, MACFARLAND, p. 298, Tr. Am. Ent. Soc. xv : n. spp.

CRABRONIDÆ.

Sphegidæ.

Nomenclature of parts of the male organs of *Fossores* discussed; CAMERON, p. 2, Biol. Centr. Am. Hym. ii.

ANDRÉ (5) continues his descriptions of European and Algerian *Sphegidæ*, as far as the commencement of *Philanthides*.

Ammophila fragilis, Sm., pl. i, fig. 5, p. 15, *gracilis*, Lep., fig. 7 & p. 16, *varipes*, Cress., fig. 17, p. 19, figured and noticed; CAMERON, Biol. Centr. Am. Hym. ii.

A. (Psammophila) alpina, Tyrol, KOHL, Verh. z.-b. Wien, xxxviii, p. 729; *A. pilocera*, Bucharan, p. 153, *nigrohirta*, Caucasus, p. 154, KOHL, Verh. z.-b. Wien, xxxviii; *A. miliaris*, pl. i, fig. 1, p. 3, *gaumeri*, pl. ii, fig. 2, Centr. America, p. 4, *micans*, *iridipennis*, p. 5, *centralis*, pl. i, fig. 12, p. 6, Guatemala, *aureonotata*, fig. 11, p. 7, Mexico, *ceres*, fig. 10, *xanthoptera*, fig. 4, p. 8, *championi*, fig. 3, p. 9, Guatemala, *striolata*, Mexico, *alticola*, fig. 9a (as *chiriguensis*), Panama, p. 10, *trichiosoma*, fig. 13, Guatemala, *picipes*, pl. ii, fig. 4, p. 11, *consors*, pl. ii, fig. 3, Mexico, *nigrocærulea*, pl. i, fig. 8, Guatemala, p. 12, *montezuma*, pl. i, fig. 15, p. 13, *dejecta*, Mexico, *cora*, pl. i, fig. 18, Guatemala, p. 14, *azteca*, Mexico, *volcanica*, fig. 19, p. 17, *chiriguensis*, pl. i, fig. 9, p. 18, Panama, *comanche*,

fig. 14, p. 19, *montana*, fig. 2, Mexico, *jason*, pl. ii, fig. 12, Guatemala, p. 20, *alpestris*, pls. i, fig. 16, & ii, fig. 5, Panama, *arnorensis*, pl. ii, fig. 6, *morrisoni*, fig. 10, Mexico, p. 21, *piceiventris*, figs. 7 & 8, Guatemala, p. 22, *quadridentata*, Mexico, p. 23, CAMERON, Biol. Centr. Am. Hym. ii : n. spp.

Pelopæus cementarius, Dru., pl. ii, fig. 9, *histrio*, Lep., fig. 11, figured ; CAMERON, Biol. Centr. Am. Hym. ii.

P. atripes, Semipalatinsk, MORAWITZ, p. 271, Hor. Ent. Ross. xxii ; *P. brachystylus*, Chinchoxo, p. 154, *P. (Chalybion) punctatus, lævigatus*, p. 155, Zanzibar, KOHL, Verh. z.-b. Wien, xxxviii : n. spp.

Chalybion zimmermanni, Dahl, figured, pl. ii, fig. 12 ; Biol. Centr. Am. Hym. ii.

Trigonopsis violaceus, Sm., figured, pl. ii, fig. 13 ; Biol. Centr. Am. Hym. ii.

Podium luteipenne, Fab., pl. ii, fig. 15, p. 27, *rufipes*, fig. 18, p. 28, figured and noticed : CAMERON, Biol. Centr. Am. Hym. ii.

P. albobillosum, pl. ii, figs. 14, 14 a & b, p. 26, *bugabense*, figs. 16 & 16a, p. 27, *bellum*, figs. 17 & 17a, p. 28, Panama, CAMERON, Biol. Centr. Am. Hym. ii, n. spp.

Aphanilopterus, n. g., p. 301, for *A. vagabundus*, n. sp., Brazil, p. 302 ; MEUNIER, Nat. Sicil. vii.

Sphex : RADOSZKOWSKI, Hor. Ent. Ross. xxii, pp. 327-329, describes the male organs of several species.

S. kohli = (*eximius*, Kohl, nec Lep.), Egypt, p. 125, ANDRÉ, Spec. Hym. iii ; *S. radoszkowskyi*, Khiva, *puncticollis*, Turcomania, p. 151, *anatolicus*, Ephesus, p. 152, KOHL, Verh. z.-b. Wien, xxxviii ; *S. erythroptera*, pl. iii, figs. 1 & 1a, p. 30, *beata*, figs. 2 & 2a, p. 31, Centr. America, *guatemalensis*, figs. 4 & 4a, *tinctipennis*, fig. 5, Guatemala, p. 32, CAMERON, Biol. Centr. Am. Hym. : n. spp.

Ampulex ruficollis, Gibraltar, CAMERON, p. 178, Mem. Soc. Manch. (4) i, ii, sp.

Larrides.

Pison sericeum, Attica, KOHL, Verh. z.-b. Wien, xxxviii, p. 140, n. sp.

Astata picea, Costa, note on ; COSTA, Atti Acc. Napoli (2) i, No. 2, p. 99.

A. pictus, p. 146, *strigosus*, p. 147, Mexico, KOHL, Verh. z.-b. Wieu, xxxviii, n. spp.

Tachytes fulvitaris, ♀, = (*erythrogastra*, Costa) ; COSTA, Atti Acc. Napoli (2) i, No. 13, p. 17.

T. erythrogastra, procera, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 90 ; *T. pygmaea*, Egypt, *japonica*, Japan, KOHL, Verh. z.-b. Wien, xxxviii, p. 141 ; *T. (Tachysphex) helmsi*, New Zealand, CAMERON, p. 182, Mem. Soc. Manch. (4) i : n. spp.

Tachysphex dubius, Rad., p. 142, *caucasicus* and *micans*, Rad., p. 143, descriptive notes on ; KOHL, Verh. z.-b. Wien, xxxviii.

T. nattereri, Soudan, p. 144, *melanarius*, Caucasus, p. 145, *syriacus*, Syria, p. 146, KOHL, Verh. z.-b. Wien, xxxviii, n. spp.

Nyssonides and Bembecides.

Mimesa costae, n. n. for *carbonaria*, Costa, nec Smith ; ANDRÉ, Spec. Hym. iii, p. 177.

Harpactes transiens, described at length, p. 3, and figured, fig. 2; COSTA, Atti Acc. Napoli (2) i, No. 10.

H. leucurus, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 53, n. sp.

Bothynostethus, Kohl, monograph of; HANDLIRSCH, SB. Ak. Wien, xcvi, Abth. 1, pp. 221-229.

B. nitens, Brazil, HANDLIRSCH, SB. Ak. Wien, xcvi, Abth. 1, p. 227, n. sp.

Scapheutes, n. g., p. 229, for *S. mocsaryi*, n. sp., Brazil, p. 232; HANDLIRSCH, SB. Ak. Wien, xcvi, Abth. 1.

Alyson, monograph of; HANDLIRSCH, SB. Ak. Wien, xcvi, pp. 235-256.

Didineis, monograph of; HANDLIRSCH, SB. Ak. Wien, xcvi, pp. 256-271.

D. wüstenii, Dalmatia, p. 263, *pannonica*, p. 264, *crassicornis*, p. 266, Hungary; HANDLIRSCH, SB. Ak. Wien, xcvi, n. spp.

Mellinus, monograph of; HANDLIRSCH, SB. Ak. Wien, xcvi, pp. 271-296.

M. compactus, ? Austria, p. 284, *obscurus*, Korea, p. 288, *pygmaeus*, Orixaba, p. 289, HANDLIRSCH, SB. Ak. Wien, xcvi, n. spp.

Entomosericus, monograph of; HANDLIRSCH, SB. Ak. Wien, xcvi, pp. 296-304.

E. concinnus, S.E. Europe, HANDLIRSCH, SB. Ak. Wien, xcvi, p. 300, n. sp.

Exeirus, monographed; HANDLIRSCH, SB. Ak. Wien, xcvi, pp. 304-308.

Stizus villosus, described at length, p. 2, and figured, fig. 1; COSTA, Atti Acc. Napoli (2) i, No. 10.

S. dispar, p. 284, *kenigi*, p. 285, *histrio*, p. 287, Transcaspian region, MORAWITZ, Hor. Ent. Ross. xxii; *S. komarovi*, Russia, p. 332, *pluschschewskii*, Astrakan, p. 333, RADOSZKOWSKI, Hor. Ent. Ross. xxii: n. spp.

Hoplisus sulcifrons, ♂ described; COSTA, Atti Acc. Napoli (2) i, No. 2, p. 91.

Gorytes trichosoma, New Zealand, CAMERON, p. 180, Mem. Soc. Manch. (4) i; *G. ruficornis*, p. 273, *eximius*, *laticinctus*, p. 274, N. America, PROVANCHER, Add. Hym. Queb.: n. spp.

Bembex geneana is ♀, *melanostoma* ♂ of one species, which is to be called *geneana*; COSTA, Atti Acc. Napoli (2) i, No. 9, p. 53.

Steniolia duplicata, California, PROVANCHER, p. 414, Add. Hym. Queb., n. sp.

Monedula nigrifrons, p. 415, *parata*, p. 416, California, PROVANCHER, Add. Hym. Queb., n. spp.

Philanthides.

Cerceris emarginata, Pz., and *rybensis*, L., distinguished; KOHL, Verh. z.-b. Wien, xxxviii, p. 727. *C. eugenia*, Schlett., and *orientalis*, Mocs., distinguished as good species, and *mocsaryi*, n. n. proposed for the latter; *id. t. c.* p. 139.

C. opalipennis, p. 136, *euryanthe*, Caucasus, *rhinoceros*, Syria, p. 137, *schletteri*, Taschkent, p. 138, KOHL, Verh. z.-b. Wien, xxxviii; *C. schlettereri*, Taschkent, RADOSZKOWSKI, p. 335, Hor. Ent. Ross. xxii; *C. æqualis*, California, PROVANCHER, p. 417, Add. Hym. Queb., n. spp.

Philanthus : RADOSZKOWSKI, Hor. Ent. Ross. xxii, pp. 323-326, describes the male organs of several species.

P. andalusiacus, Spain, KOHL, Verh. z.-b. Wien, xxxviii, p. 140 ; *P. septralis* (Duf.), Algeria, p. 323, *sibiricus*, Wladiwostok, p. 325, RADOSZKOWSKI, Hor. Ent. Ross. xxii ; *P. harringtoni*, Ottawa, PROVANCHER, p. 278, Add. Hym. Queb. : n. spp.

Eucerceris insignis, California, PROVANCHER, p. 418, Add. Hym. Queb., n. sp.

Corynopus simplicipes, Turkestan, MORAWITZ, p. 291, Hor. Ent. Ross. xxii, n. sp.

Anthophilus hellmuthi, Everam., redescribed, p. 326, and male organs figured ; RADOSZKOWSKI, Hor. Ent. Ross. xxii.

A. 14-punctatus, p. 289, *elegans*, p. 290, Semipalatinsk, MORAWITZ, Hor. Ent. Ross. xxii, n. spp.

Orabronides.

Trypoxylon striatum, Ottawa, PROVANCHER, Add. Hym. Queb. p. 283, n. sp.

Alepidaspis diphyllus, Costa, referred to *Notoglossa* and redescribed ; COSTA, Atti Acc. Napoli (2) i, No. 2, p. 92.

Notoglossa frondigera, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 92, n. sp.

Rhopalum gracile, Wesm., ♂ described ; COSTA, Atti Acc. Napoli (2) i, No. 9, p. 54.

Ammoplanus, Gir., = (*Hoplocrabron*, Dest.) ; KOHL, Verh. z.-b. Wien, xxxviii, p. 724.

Diphlebus austriacus, Austria, KOHL, Verh. z.-b. Wien, xxxviii, p. 723, n. sp.

Diodontus handlirschii, Tyrolean Alps, KOHL, Verh. z.-b. Wien, xxxviii, p. 725, n. sp.

Passulaceus abnormis, Carinthia, KOHL, Verh. z.-b. Wien, xxxviii, p. 726, n. sp.

Crossocerus bison, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 54, n. sp.

Crabro (*Crossocerus*) *resmaeli*, habits noticed ; PISSOT, p. cxx, Bull. Soc. Ent. Fr. (6) viii. *C. nigratarsus*, H. Sch., and other spp. noticed, pp. 720-722 ; *C. kriechebaumeri*, Kohl, ♂ described, p. 722 ; KOHL, Verh. z.-b. Wien, xxxviii. *C.* : monograph of the section *Thyreopus* ; id. Zool. Jahrb. iii, Syst. Abth. pp. 543-590, pl. xiv.

C. (Thyreopus) thyreophorus, N. America, p. 585, *pellista*, Mexico, p. 586, KOHL, Zool. Jahrb. iii, Syst. Abth. ; *C. (Lindeni) aegyptius*, Egypt, *C. (Solenius) persicus*, Schiraz, p. 134, *schletteri*, Tyrol, p. 135, id. Verh. z.-b. Wien, xxxviii ; *C. cora*, New Zealand, CAMERON, p. 181, Mem. Soc. Manch. (4) i ; *C. niger*, Ottawa, PROVANCHER, p. 419, Add. Hym. Queb. : n. spp.

Thyreopus ingricus, Ingria, MORAWITZ, p. 294, Hor. Ent. Ross. xxii ; *T. elongatus*, N. America, PROVANCHER, p. 293, Add. Hym. Queb. : n. spp.

Blepharipus caspicus, Transcaspiian region, MORAWITZ, p. 292, Hor. Ent. Ross. xxii ; *B. nigricornis*, N. America, PROVANCHER, p. 294, Add. Hym. Queb. : n. spp.

Solenius cephalotes, nest of; RÜDOW, Soc. Ent. iii, p. 59.

Oxybelus transcaspicus, Askhabad, RADOSZKOWSKI, p. 345, Hor. Ent. Ross. xxii, n. sp.

Hoplomerus læripes, habits, metamorphoses; BORRIES, Ent. Med. pp. 202-211. *H. spinipes*, L., habits; AURIVILLIUS, Cfv. Ak. Fürh. 1888, p. 606.

H. signaticollis, p. 262, *æstimandus*, p. 264, Transcaspian region, MORAWITZ, Hor. Ent. Ross. xxii, n. spp.

Pompilides.

Male organs described and figured; RADOSZKOWSKI, Bull. Mosc. 1888, pp. 462-493, pls. xii-xvi.

Pompilus: generic characters, p. 464; male organs of several species described and figured, pp. 464-468, pl. xii, figs. 1-7; RADOSZKOWSKI, Bull. Mosc. 1888. *P. viaticus*, Latr., p. 330, *plumbeus*, *trivialis*, v. d. L., p. 332, *pectinipes*, p. 334, habits; NICOLAS, C.R. Ass. Sci. Fr. xvii, pt. 2. *P. niger*, Fabr., and cocoons, note on; BRISCHKE, Schr. Ges. Dautz. (2) vii, p. 95.

P. plicatus, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 93; *P. retusus*, *luctigerus*, p. 31, *rubiginicollis*, p. 31, Sardinia, COSTA, *op. cit.* (2) ii, No. 8; *P. alpicagus*, Tyrol, KOHL, Verh. z.-b. Wien, xxxviii, p. 731; *P. asiaticus*, p. 274, *truchmenus*, p. 276, W. Asia, MORAWITZ, Hor. Ent. Ross. xxii; *P. galactopterus*, Caucasus, p. 147, *sericeomaculatus*, Asia Minor, p. 148, *castor*, *pollux*, Tyrol, p. 150 (these two are the *Planiceps latreillei*, auct., p. 149), KOHL, Verh. z.-b. Wien, xxxviii; *P. sidemii*, Wladiwostok, p. 331, *schlettereri*, Caucasus, p. 332, RADOSZKOWSKI, Hor. Ent. Ross. xxii; *P. peranceps*, Andalusia, p. 466, *binotatus*, Taschkent, p. 467, *sennotatus* (Eversm. i. l.), Orenburg, RADOSZKOWSKI, Bull. Mosc. 1888; *P. tristis*, p. 342, *deceptor*, p. 343, *kohlii*, p. 344, Askhabad, RADOSZKOWSKI, Hor. Ent. Ross. xxii: n. spp.

Agania punctum, F., *fullax*, Eversm., ♂ organs described; RADOSZKOWSKI, Bull. Mosc. 1888, p. 468, pl. xii.

A. (Pogonius) erythropus, Attica, KOHL, Verh. z.-b. Wien, xxxviii, p. 150, n. sp.

Pogonius hircanus, F., ♂ organs; RADOSZKOWSKI, Bull. Mosc. 1888, p. 468, pl. xiii.

Homonotus rectangulus, Charkov, p. 277, *nasutus*, Astrakan, p. 279, *signaticentris*, p. 281, *cyanopterus*, p. 282, Transcaspian region, MORAWITZ, Hor. Ent. Ross. xxii, n. spp.

Aporus bicolor, Spin., *nigritulus*, Kl., ♂ organs described; RADOSZKOWSKI, Bull. Mosc. 1888, p. 469, pl. xiii.

Cyphonyx flavicornis, Dahl., *dorsalis*, Lep., male organs described; RADOSZKOWSKI, Bull. Mosc. 1888, p. 470, pl. xiii.

C. tuberculatus, Nepaul, RADOSZKOWSKI, *l. c.*, n. sp.

Wesmaelinus albocalcaratus (Evers.), Caucasus, Siberia, *caucasicus*, Caucasus, p. 472, *egyptiacus*, Egypt, p. 473, RADOSZKOWSKI, Bull. Mosc. 1888, n. spp.

Ferreola, the species of named, pp. 472-477; RADOSZKOWSKI, Bull. Mosc. 1888.

F. syraensis, Syra, *caucasicus*, Caucasus, p. 474, *rossica*, Orenburg, p. 475, *sirdariensis*, Syr-Daria, *komarowii*, Transcaspiian region, p. 475, RADOSZKOWSKI, Bull. Mosc. 1888, n. spp.

Pseudoferreola, n. g., p. 477, for *P. striata*, Andalusia, p. 478, *incisa*, Andalusia and Algeria, p. 479, n. spp.; RADOSZKOWSKI, Bull. Mosc. 1888.

Salix bicolor, *sezpunctatus*, F., *binotatus*, Lep., male organs described, p. 481, pl. xiv; RADOSZKOWSKI, Bull. Mosc. 1888.

S. costae, Caucasus, &c., RADOSZKOWSKI, p. 497, Bull. Mosc. 1888, n. sp.

Priocnemioides, n. g., p. 482, for *P. andalusiensis*, n. sp., Spain, p. 483, and *Priocnemis fulvicornis*, Cress, *flammpennis*, Sm.; RADOSZKOWSKI, Bull. Mosc. 1888.

Priocnemis dahlbomi, Sich., variation of; COSTA, Rend. Acc. Nap. (2) ii, p. 108. *P. perligerus*, Costa, referred to *Ceropales*; Costa, Atti Acc. Napoli (2) ii, No. 8, p. 40. *P. ophthalmicus*, Cost., *variabilis*, Rossi, *bidecoratus*, Cost., *annulatus*, Fab., *fuscus*, Fab., male organs described, pp. 484-486, pls. xiv & xv; RADOSZKOWSKI, Bull. Mosc. 1888.

P. trifurcus, France, RADOSZKOWSKI, p. 485, Bull. Mosc. 1888; *P. pogonioides*, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 93; *P. grossus*, Sardinia, COSTA, *op. cit.* (2) ii, No. 8, p. 29; n. spp.

Ceropaleoides, n. g., p. 486, for *Ceropales komarowii*, Rad.; RADOSZKOWSKI, Bull. Mosc. 1888.

Hemipepsis luteipennis, Dahlb., ♂ organs described; RADOSZKOWSKI, Bull. Mosc. 1888, p. 487, pl. xv.

Pepsis chrysobapta, Sm., *pan*, Moc., *marginata*, Pal., *grossa*, F., male organs described, pp. 488 & 489, pl. xv; RADOSZKOWSKI, Bull. Mosc. 1888.

P. cassiope, *clotho*, p. 161, *lara*, *spengeli*, p. 162, *sickmanni*, p. 163, Brazil, *cassandra*, Chili, p. 162, MOCÁRY, Abh. Ver. Brem. x, n. spp.

Ceropales, family characters noticed, p. 489; *C. maculata*, *histris*, Fab., male organs described, pp. 489 & 490, pl. xv; RADOSZKOWSKI, Bull. Mosc. 1888. *C. maculata*, Sicilian var. noticed; COSTA, Rend. Acc. Nap. (2) ii, p. 109.

C. sibirica, Siberia, p. 490, *mlokosewitszi*, Caucasus, p. 491, RADOSZKOWSKI, Bull. Mosc. 1888; *C. altaica*, Semipalatinsk, MORAWITZ, p. 272, Hor. Ent. Ross. xxii: n. spp.

Scoliides.

Tiphia femorata, larva, and *Rhizotrogus solstitialis*; BERGROE (63).

Scolia unifasciata, Cyr., in Scandinavia; SCHÖYEN, Ent. Tidskr. ix, pp. 109-113.

Pseudomeria tamerlanella, Saus., = (*Komarowia victoriosia*, Rad.); MORAWITZ, p. 299, Hor. Ent. Ross. xxii.

Meria albipes, p. 298, *sculpturata*, p. 299, *nocturna*, p. 301, Central Asia, MORAWITZ, Hor. Ent. Ross. xxii, n. spp.

Myzine erythrura, Costa, ♀ described; COSTA, Atti Acc. Napoli (2) i, No. 2, p. 94.

Elis dives, p. 410, *quadricincta*, p. 411, California, PROVANCHER, Add. Hym. Queb., n. sp.

Dielis angulata, Askhabad, MORAWITZ, p. 296, Hor. Ent. Ross. xxii, n. sp.

MUTILLIDÆ.

Dasylabris koenigi, Kiltytschynar, RADOSZKOWSKI, p. 348, Hor. Ent. Ross. xxii, n. sp.

Apterogyna morawitzi, Askhabad, RADOSZKOWSKI, p. 349, Hor. Ent. Ross. xxii, n. sp.

Mutilla erythrocephala, auct., note on the species confounded under this name ; DALLA TORRE, Wien. ent. Z. vii, p. 254, *M. subcomata*, Wesm., ♂ described ; RADOSZKOWSKI, p. 347, Hor. Ent. Ross. xxii. *M. hispanica* n. var. *melanolepis* ; COSTA, Atti Acc. Napoli (2) i, No. 9, p. 54. *M. bison* fully described, p. 4, figured fig. 3 ; COSTA, *op. cit.* No. 10. *M. parens*, Cost., validity of ; COSTA, *op. cit.* (2) ii, No. 7, p. 9, note.

M. intermedia (Dest.?), Sicily, COSTA, Rend. Acc. Nap. (2) ii, p. 104 (n. sp.?) ; *M. agusii*, Sardinia, *id.* Atti Acc. Napoli (2) i, No. 9, p. 55 ; *M. laticeps*, p. 345, Astrabad, *transcaspica*, p. 346, *binio*, p. 347, Askhabad, RADOSZKOWSKI, Hor. Ent. Ross. xxii ; *M. portschinskii*, Caucasus, p. 330, *kuschakewitzi*, Wiernoje, p. 331, *id. t. c.* : n. spp.

Pseudomutilla, n. g., p. 17, for *P. sardiniensis*, n. sp., Sardinia, p. 18, COSTA, Atti Acc. Napoli (2) i, No. 13.

Photopsis canadensis, Ottawa, PROVANCHER, p. 410, Add. Hym. Queb., n. sp.

Myrmosa ephippium, Jur., note on ; COSTA, Atti Acc. Napoli (2) i, No. 9, p. 55.

FORMICIDÆ.

Structure of and function of trituratory-crop in many Ants, and phylogenetic table based thereon ; EMERY (230).

The habits of *Atemeles* and *Lomechusa*, and their relations with various species of Ants discussed ; WASMANN (912).

Cumponotus kiesewetteri, Rog., variation, races described, p. 260 ; *C. libanicus*, And., small worker, p. 261, *gestroi*, Em., race, *creticus*, p. 261, *rubripes*, Dr., numerous forms described, pp. 261-265 ; FOREL, B. E. Z. xxxii. *C. marginatus*, Latr., var. *hyalinipennis* ; COSTA, Atti Acc. Napoli (2) i, No. 9, p. 56. *C. pennsylvanicus*, new parasite of ; FOX, P. E. Soc. Wash. i, p. 100.

C. melichloros, Christmas I., KIRBY, P. Z. S. 1888, p. 551, n. sp.

MAC COOK's observations on the habits of *Formica rufa* and *Atta ferrens*, in P. Ac. Phil., reprinted, pp. 189-192, Ann. N. H. (6) ii.

Formica rufa, observations on the habits and manners of ; REUTER (737). *F. sanguinea*, relation with its slaves ; LUBBOCK, J. L. S. xx, p. 118.

Dolichoderus borealis, Canada, PROVANCHER, p. 408, Add. Hym. Queb., n. sp.

Lobopelta australis, La Plata, EMERY, p. 693, Ann. Mus. Genov. (2) vi, n. sp.

Lasius fuliginosus, nest of ; ANDRÉ (6). *L. niger*, nest of ; LUBBOCK, J. L. S. xx, p. 136 and illustration : relations of with *Aphis papaveris* on *Vicia faba* ; BOS (91).

Tapinoma erraticum, nest of ; LUBBOCK, J. L. S. xx, pp. 129 & 136.

Proceratium europæum, For., forms of described; FOREL, B. E. Z. xxxii, p. 258.

Eciton spegazzinii, *angustinode* (= *hetschkoi*, Em., nec Mayr.), Argentine Rep., EMERY, p. 691, Ann. Mus. Genov. (2) vi, n. spp.

Aphanogaster splendida, Rog., race *rugosa-ferruginea*, n. st.; FOREL, B. E. Z. xxxii, p. 260.

Pheidole sp.?, habits in Queensland, descriptive note; TRYON (888).
P. triconstricta, For., n. var. *nitidula*; EMERY, p. 693, Ann. Mus. Genov. (2) vi.

Meranoplus, sp.?, habits, descriptive note; TRYON (888).

Monomerium pharaonis, Latr., note on habits; BELLEVOYE, Bull. Soc. Ent. Fr. (6) viii, p. clxxvii-clxxx.

Anochetus ghilianii, presumed ♀; SAUNDERS, Ent. M. M. xxv, p. 61.

TEREBRANTIA.

[Cf. ASHMEAD (16, 17, 18, 20, 22, 23, 24, 25), AURIVILLIUS (32), BRAUNS (101), BRISCHKE (105, 106, 107, 108), BUYSSON (123), CAMERON (127, 128, 129, 319), CAPRON (132), COSTA (164, 165, 166), DALLA TORRE (175), DESTEFANI (182), FORBES (279), HOWARD (398, 399, 400, 401), KRIECHBAUMER (472, 473, 474, 475, 476), LEMOINE (496), MARSHALL (555), PROVANCHER (686), RIGGIO & DE STEFANI-PEREZ (753), RILEY (762), RUDOW (780, 781), SCHLECHTENDAHL (803), SCHMIEDEKNECHT (807, 808), THOMSON (883, 884), WEED (918, 920).]

CHRYSIDIDÆ.

Notozus nitidus, Aar., figured, pl. xx, figs. 3 & 3a; Biol. Centr. Am. Hym.

Cleptes abaillei and *putoni*, Buys., males described; BUYSSON, Rev. d'Ent. vii, p. 13.

Hedychrum sculpticentre, Algeria, *phœnix*, Syria, BUYSSON, Rev. d'Ent. vii, p. 2; *H. japonicum*, p. 123, *lewisi*, p. 124, Japan, CAMERON, P. Manch. Soc. xxvi : n. spp.

Hedychridium roseum, Ros., n. var. *chloropyga*; *nanum*, Chev., is also a var. of; BUYSSON, Rev. d'Ent. vii, p. 12.

H. monochroum, Marseilles, BUYSSON, p. 3. Rev. d'Ent. vii; *H. guatemalense*, pl. xx, figs. 4 & 4a, *miliare*, figs. 5 & 5a, Guatemala, CAMERON, p. 459, Biol. Centr. Am. Hym. : n. spp.

Chrysis pruna, Grib., additional characters, p. 8, *phryne*, Ab., ♂ described, p. 9, *candens*, Germ., full characters, p. 10, *coruleicentris*, Ab., ♂ described, p. 11, *hydropica*, Ab., ♀, p. 12, BUYSSON, Rev. d'Ent. vii. *C. parrula*, Fab., pl. xx, figs. 6 & 6a, *corulans*, Fab., figs. 11 & 11a, figured; Biol. Centr. Am. Hym.

C. raguse, pp. 125 & 218, DE STEFANI, Nat. Sicil. vii; *C. fulminatrix*, p. 4, *chloroprasis*, p. 5, *anceyi*, p. 6, Algeria, BUYSSON, Rev. d'Ent. vii; *C. japonicus*, Japan, p. 125, *pulchellus*, Ceylon, p. 126, CAMERON, P. Manch. Soc. xxvi; *C. mexicana*, pl. xx, figs. 10 & 10a, p. 460, *sonorensis*, figs. 9 & 9a, Mexico, *quadriloberculata*, figs. 7 & 7a.

Guatemala, p. 461, *montezuma*, Mexico, p. 463, *panamensis*, figs. 8 & 8a, p. 464, *pilifrons*, figs. 13 & 13a, *proxima*, figs. 12 & 12a, p. 465, Panama, CAMERON, t. c. : n. spp.

Parnopes fulvicornis, Mexico, pl. xx, figs. 1 & 1a, p. 466, CAMERON, Biol. Centr. Am. Hym., n. sp.

Holopyga ferrida n. var. *foreolata*; DE STEFANI, Nat. Sicil. vii, p. 119.

Stilbum calens, Fab., variation; CUISINE, p. clviii, Bull. Soc. Ent. Fr. (6) viii.

Philoctetes omaloides, Algeria, BUYSSON, Rev. d'Ent. vii, p. 1, n. sp.

Pyria polystigma, Buyss., note on; BUYSSON, p. 7, Rev. d'Ent. vii.

Amisega, n. g., for *A. cuprifrons*, n. sp., Panama, pl. xx, figs. 2 & 2a; CAMERON, p. 457, Biol. Centr. Am. Hym.

ICHNEUMONIDÆ.

Ichneumonides.

On phytophagous species of; SCHLECHTENDAHN (803).

The numbers of the various orders from which Hymenopterous parasites have been reared; HOWARD, P. E. Soc. Wash. i, p. 104.

The hosts of a few larger *Ichneumons*; Ins. Life, i, p. 161.

Ichneumonide bred in N. America; WEED, Psyche, v, pp. 51-53.

Notosemus dives, Seeresseu, BRISCHKE, Schr. Ges. Danz. (2) vi, Heft iv, p. 88, n. sp.

Ichneumon: THOMSON continues his classification and descriptions of the European species of this and allied genera (883). *I. pulvinatus*, ♂ described, p. 29, *castaniventris* and *alpicola*, notes on, p. 36; KRIECHBAUMER, Ann. Hofmuseum Wien, iii. *I. patricius*, Hal., supplementary description; CAMERON, P. Manch. Soc. xxvi, p. 127. *I. latepicus*, Costa, referred to *Platylabus*; *I. calabrarius* noticed; KRIECHBAUMER, p. 210, Ent. Nachr. xiv. *I. suspiciosus*, *extensorius*, ♂s described, pp. 9-16, *cerebrosus*, ♂ discussed, p. 278, *fulvicornis*, Gr., sexes discussed, pp. 279-281, *subannulatus*, Gr., ♂ discussed, p. 282; *id. t. c. I. consimilis*, Wesm., p. 1221, *diversor*, Wesm., ♂, = (*divergens*, Holm.), *bucculentus*, Wesm., *suspiciosus*, Wesm., ♂, = (*computatorius*, Holmg.), p. 1223, *mordax*, Kriech., p. 1226, *validicornis*, Holmg., ♂?, p. 1227, *divergens*, Holm., ♂, p. 1229, *exilicornis*, Wesm., ♂, noticed or described at length; THOMSON, Opusc. Ent. xii. *I. digrammus*, Gr., ♂ described, p. 13, *rufinus*, *sarcitorius*, *fusorius* noticed, p. 14; COSTA, Atti Acc. Napoli (2) ii, No. 7. *I. calabrarius*, Costa, redescribed; *id. op. cit.* No. 8, p. 31. *I. instabilis* reared from adult specimen of *Chionobas semidea*; HOWARD, P. E. Soc. Wash. i, p. 95.

I. liocnemis, p. 1220, *hypolius*, p. 1226, *trispilus*, p. 1228, *leucopeltis*, p. 1230, *aequalcar*, p. 1231, Sweden, THOMSON, Opusc. Ent. xii; *I. mesostilpnus*, Germany, *nudicoxa*, Sweden, *id.* Ann. Soc. Ent. Fr. (6) viii, p. 107; *I. helensis*, Hela, BRISCHKE, Schr. Ges. Danz. (2) vii, Heft i, p. 58; *I. corsus*, Corsica, p. 23, *cynthiae*, Austria, *rogenhoferi*, Engadine, p. 24, *amphibolus*, p. 26, *leptostigma*, p. 27, Vienna, *leris*, Swiss Alps, p. 28, *spilomerus*, Hungary, p. 29, *manni*, Asia Minor, p. 30, KRIECHBAUMER, Ann. Hofmuseum Wien, iii; *I. insignitus*, Sardinia, COSTA, Atti Acc. Napoli (2)

i, No. 2, p. 99; *I. castoldii*, Sardinia, *id. op. cit.* ii, No. 7, p. 13; *I. obsoletorius*, Sardinia, *id. op. cit.* ii, No. 8, p. 32; *I. saguenayensis*, p. 356, *limaculatus*, p. 357, *brevipennis*, p. 428, N. America, PROVANCHER, *Add. Hym. Queb.* : n. spp.

Patroclus (Ichneumon) venezuelensis, Venezuela, CAMERON, *P. Manch. Soc.* xxvi, p. 128, n. sp.

Limerodes (Wesm.), note on; THOMSON, *Ann. Soc. Ent. Fr.* (6) viii p. 111.

Apæleticus (Wesm.), characters of; THOMSON, p. 126, *Ann. Soc. Ent. Fr.* (6) viii. *A. flammeolus*, Wesm., ♂ described; BRISCHKE, *Schr. Ges. Danz.* (2) vii, Heft i, p. 105.

A. sardous, *kriechbaumeri*, Sardinia, COSTA, *Atti Acc. Napoli* (2) i, No. 13, n. spp.

Trogus violaceus, Europe, from *Papilio hospiton*, RUDOW, *Ent. Nachr.* xiv, p. 84; *T. cyaneipennis*, Sardinia, COSTA, *Atti Acc. Napoli* (2) ii, No. 7, p. 14 : n. spp.

Amblyteles alternator, Tischb., and *hæreticus*, Wesm., ♂s described, p. 31, *pseudonymus*, Wesm., note on, p. 36; KRIECHBAUMER, *Ann. Hofmuseum Wien*, iii.

A. longigena, p. 112, *anurus*, p. 114, *truncicola*, p. 115, *limnophilus*, *stagnicola*, p. 119, *simplicidens*, p. 120, Sweden, THOMSON, *Ann. Soc. Ent. Fr.* (6) viii; *A. tauricus*, S.E. Europe, KRIECHBAUMER, *Ann. Hofmuseum Wien*, iii, p. 32; *A. violaceus*, p. 84, *fumipennis*, S. Europe, *dimidiativentris*, Normandy, p. 85, *varipes*, Europe, *fumipennis*, p. 86, *rufipes*, *dromedarius*, p. 87, *erythromerus*, Mediterranean, *palliventris*, Normandy, p. 88, *contristans*, Thuringia, *quadrimaculatus*, Lombardy, p. 89, *bellemitus*, France, *muticus*, p. 90, *sulfureopictus*, Alps, *erythropygus*, Europe, p. 91, *ruficornis*, Alps, p. 92, *siculus*, Palermo, p. 120, *bipunctatus*, *floropictus*, Marseilles, p. 121, *croceiventris*, Portugal, p. 122, *seazonatus*, Sicily, *laticinctus*, Spain, p. 123, *collaris*, Normandy, p. 124, *tristis*, Portugal, p. 129, *lotharingicus*, Italy and France, *zonatus*, Normandy, p. 130, *mauritanicus*, Algiers, *serenus*, S. Europe, p. 131, *massiliensis*, Marseilles, p. 132, *bicolor*, *italicus*, p. 133, *laticeps*, *gynandromorphus*, p. 134, S. Europe, *triguttatus*, *bizonatus*, Normandy, p. 135, RUDOW, *Ent. Nachr.* xiv : n. spp.

Pithotomus, n. g., p. 32, for *P. rufiventris*, n. sp., Turkey, p. 33; KRIECHBAUMER, *Ann. Hofmuseum Wien*, iii.

Platylabus histrio, Wesm., descriptive note; BRISCHKE, *Schr. Ges. Danz.* (2) vii, p. 58.

P. vibicarie, *frustata*, Europe, KRIECHBAUMER, *Ann. Hofmuseum Wien*, iii, p. 34; *P. concinnus*, Sweden, THOMSON, *Opusc. ent.* xii, p. 1235; *P. opaculus*, *punctifrons*, Sweden, THOMSON, p. 124, *Ann. Soc. Ent. Fr.* (6) viii : n. spp.

Anisobus platystylus, *parriceps*, Europe, THOMSON, p. 122, *Ann. Soc. Ent. Fr.* (6) viii, n. spp.

Phæogenes aries, Seeresen, BRISCHKE, *Schr. Ges. Danz.* (2) vi, Heft iv, p. 87; *P. sectus*, Vancouver, PROVANCHER, p. 358, *Add. Hym. Queb.* : n. spp.

Dicelotus trochanteratus, Seeresen, BRISCHKE, *Schr. Ges. Danz.* (2) vi, p. 87, n. sp.

Colpognathus (?) *magellansis*, Gray Harbour, CAMERON, P. Manch. Soc. xxvi, p. 129, n. sp.

Ischnus ridibundus, *proximus*, Sardinia, COSTA, p. 23, Atti Acc. Napoli (2) i, No. 13, n. spp.

Oronotus thoracicus, Sardinia, COSTA, p. 24, Atti Acc. Napoli (2) i, No. 13, n. sp.

Cryptides.

Phyzelus fuscatus, West Prussia, BRISCHKE, Schr. Ges. Danz. (2) vii, Heft i, p. 105, n. sp.

Phygadenon flagitator, Ross., variation noticed; COSTA, p. 15, Atti Acc. Napoli (2) ii, No. 7.

P. flavipes, p. 1238, *stilpninus*, p. 1239, *armatulus*, p. 1240, *ochrogaster*, p. 1241, *ripicola*, p. 1242, Sweden, THOMSON, Opusc. Ent. xii; *P. curticus*, N. America, PROVANCHER, p. 360, Add. Hym. Queb. : n. spp.

Leptocryptus flavipes, Sweden, THOMSON, Opusc. Ent. xii, p. 1243, n. sp.

Stilpnus deplanatus, Gr., figured pl. ii, fig. 9, noticed p. 50; P. S. Lond. E. Soc. 1887.

S. deficiens, Ottawa, PROVANCHER, p. 359, Add. Hym. Queb., n. sp.

Cryptus scutellatus, Prov., to be called *ornatus*, Prov.; PROVANCHER, p. 360, Add. Hym. Queb.

C. myrmecoleonis, Centr. Europe, RÜDOW, Soc. Ent. iii, p. 137; *C. hæmatorius*, *leucozonatus*, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 99; *C. fuliginipennis*, Sardinia, COSTA, op. cit. No. 13, p. 24; *C. nigricoxus*, *spissicornis*, *fletcheri* (but, p. 438, this is said to be *culipterus*, Say), N. America, PROVANCHER, p. 361, Add. Hym. Queb. : n. spp.

Gambrus (Frst.), *Cryptus* (Gr.) *maculatus*, West Prussia, BRISCHKE, Schr. Ges. Danz. (2) vii, Heft i, p. 106, n. sp.

Microcryptus pectoralis, Sweden, THOMSON, Opusc. ent. xii, p. 1257, n. sp.

Macrochasmus, n. g., for *M. alysiina*, n. sp., Lapland; THOMSON, Opusc. ent. xii, p. 1279.

Plectocryptus curvus, Gr., relations with *Hoplomercus lævipes*; BORRIES, Ent. Med., pp. 207-209.

Mesostenus sericeus, Prov., referred to *Mesoleptus*; PROVANCHER, p. 362, Add. Hym. Queb.

M. crassifemur, Sweden, THOMSON, Opusc. ent. xii, p. 1237; *M. cingulatus*, Sardinia, COSTA, p. 15, Atti Acc. Napoli (2) ii, No. 7; *M. albifacies*, Ottawa, PROVANCHER, p. 362, Add. Hym. Queb. : n. spp.

Hemiteles cyclogaster var. described; THOMSON, Opusc. ent. xii, p. 1246.

H. bellicornis, p. 1243, *notaticrus*, p. 1244, *clausus*, p. 1245, *ischnocerus*, p. 1246, Sweden, THOMSON, Opusc. ent. xii; *H. albipalpis*, Hela, BRISCHKE, Schr. Ges. Danz. (2) vii, Heft i, p. 59; *H. pygmaeus*, Dantzig, id. t. c. p. 19; *H. hirtus*, Switzerland, BRAUNS, MT. schw. ent. Ges. viii, p. 5; *H. collinus*, Sardinia, COSTA, p. 24, Atti Acc. Napoli (2) i, No. 13 : n. spp.

Pezomachus pilosus, England, CAPRON, Ent. M. M. xxiv, p. 217; *P. niger*, California, PROVANCHER, p. 362, Add. Hym. Queb. : n. spp.

Ophioniles.

Heteropelma dulone, N. America, RILEY, *Ins. Life*, i, p. 177; *H. longipis*, California, PROVANCHER, p. 363, *Add. Hym. Queb.* : n. spp.

Anomalon scernendum, p. 17, *posticum*, p. 18, Sardinia, COSTA, *Atti Acc. Napoli* (2) ii, No. 7; *A. fulvo-hirtum*, Amazons, CAMERON, *P. Manch. Soc. xxvi*, p. 132 : n. spp.

Paniscus cephalotes, colour of eggs and its value; POULTON, *Tr. E. Soc.* 1838, p. 588.

P. lineolatus, Sardinia, COSTA, *Atti Acc. Napoli* (2) i, No. 2, p. 100; *P. melanurus*, *opaculus*, *ocellaris*, p. 1199, *dilatatus*, p. 1200, *brachycerus*, *gracilipes*, p. 1201, Sweden; THOMSON, *Opusc. ent.* xii : n. spp.

Parabatus, n. g., p. 1194, for *P. nigricarpus*, *latungula*, p. 1196, *cristatus*, p. 1197, n. spp., Sweden, and including *Paniscus virgatus*, Grav.; THOMSON, *Opusc. ent.* xii.

Campoplex gracilis, Hela, BRISCHKE, *Schr. Ges. Danz.* (2) vii, p. 55; *C. semiflavus*, Sardinia, COSTA, *Atti Acc. Napoli* (2) i, No. 2, p. 100; *C. krieckbaumeri*, Sardinia, *id. t. c.* No. 9, p. 56 : n. spp.

Charops fuscipennis, California, PROVANCHER, p. 365, *Add. Hym. Queb.*, n. sp.

Linneria krieckbaumeri, Bridg., = (*Spudastica petiolaris*, Th.); BRIDGMAN, *Ent. M. M.* xxv, p. 163.

Cremastus pleurovittatus, Sardinia, COSTA, *Atti Acc. Napoli* (2) i, No. 2, p. 100; *C. cookii*, N. America, WEED, *Ent. Am.* iv, p. 150 : n. spp.

Podogaster striatus, Amazons, CAMERON, *P. Manch. Soc. xxvi*, p. 131, n. sp.

Mesochorus splendidulus and *politus*, Gr., problematic females noticed; BRISCHKE, *Schr. Ges. Danz.* (2) vii, Heft i, p. 56.

M. truncatus, Vancouver, PROVANCHER, p. 365, *Add. Hym. Queb.*, n. sp.

Plectiscides : of N. Europe, revised by THOMSON (883). Owing to the absence of references, it is difficult to say how many of the genera are proposed as new, especially as the previous genera of Foerster are not included in Scudder's list. Thomson also mentions several subgeneric names, which may be new, but are not noticed below.

Porizon arthroleucus, Sardinia, COSTA, *Atti Acc. Napoli* (2) ii, No. 7, p. 19; *P. albipes*, *californicum*, N. America, PROVANCHER, p. 364, *Add. Hym. Queb.* : n. spp.

Allomacrus, n. g., p. 1281, for *A. pimplyrius*, n. sp., Europe, p. 1282, THOMSON, *Opusc. ent.* xii.

Symplexis facialis, Sweden, THOMSON, *Opusc. ent.* xii, p. 1286, n. sp.

Blapticus dentifer, p. 1288, *crassulus*, p. 1289, N. Europe, THOMSON, *Opusc. ent.* xii, n. spp.

Catomicrus, n. g., p. 1292, for *C. trichops*, n. sp., Sweden, p. 1293; THOMSON, *Opusc. ent.* xii.

Plectiscus (*Aperileptus*) *obliquus*, p. 1298, *P. bistriatus*, p. 1299, *subteres*, p. 1300, *eury stigma*, p. 1301, *curticauda*, p. 1302, *P. (Dialipsis) crassipes*, p. 1304, *D. (Proclitus) longitarsis*, p. 1306, *heterocerus*, p. 1307, Northern and Central Europe. THOMSON, *Opusc. ent.* xii, n. spp.

Megastylus pilicornis, p. 1312, *pleuralis*, p. 1313, Europe, THOMSON, Opusc. ent. xii. n. spp.

Miomieris glabricentris, *rectangulus*, Europe, THOMSON. Opusc. ent. xii, p. 1317, n. spp.

Enicospilus, St., characters of; THOMSON, p. 1187, Opusc. ent. xii. The Swedish species described, pp. 1188 & 1189.

Ophion longigena, *distans*, p. 1191, *scutellaris*, p. 1192, Sweden, THOMSON, Opusc. ent. xii; *O. dichromopterus*, Sardinia, COSTA, Atti Acc. Napoli (2) ii, No. 7, p. 17: n. spp.

Eretastes alpinus, Swiss Alps, KRIECHBAUMER, Ent. Nachr. xiv, p. 354; *E. scutellaris*, Switzerland; BRAUNS, Mt. schw. ent. Ges. viii; p. 7: n. spp.

Banchus polychromus, Vancouver, PROVANCHER, p. 366, Add. Hym. Queb., n. sp.

Banchoides, n. g., for *Banchopsis*, Kriechb., nec Rud.; DALLA TORRE, Wien. ent. Z. vii, p. 220.

Eucerbanchus maculipennis, genus and species fully described, p. 6; figured, fig. 5; COSTA, Atti Acc. Napoli (2) i, No. 10.

Tryphonides.

Hellewigia obscura, Gr., ♂ ♀ described; BRAUNS, Mt. schw. ent. Ges. viii, p. 7.

Perilissus fenellæ, *cingulatus*, Dantzig, BRISCHKE, Schr. Ges. Danz. (2) vii, Heft i, p. 9, n. spp.

Mesoleius grandis, p. 1260, *pulcherrimus*, p. 1261, *subroseus*, p. 1262, *lopleurus*, *longicentris*, p. 1263, *dorsatus*, *nigriscuta*, p. 1264, Sweden, THOMSON, Opusc. ent. xii; *M. tricoloripes*, Sardinia, COSTA, Atti Acc. Napoli (2) ii, No. 7, p. 16; *M. bisignatus*, Etna, *id.*, Rend. Acc. Nap. (2) ii, p. 107; *M. chiconimienensis*, N. America, PROVANCHER, p. 368, Add. Hym. Queb. : n. spp.

Triphon nigricarpus, Cost., referred to *Exenterus*; COSTA, Rend. Acc. Nap. (2) ii, p. 109.

T. ceratophorus, Sweden, THOMSON, Opusc. ent. xii, p. 1256; *T. schmiedeknechtii*, Switzerland, BRAUNS, Mt. schw. ent. Ges. viii, p. 4; *T. rufopectus*, N. America, PROVANCHER, p. 367, Add. Hym. Queb. : n. spp.

Trematopygus, *Spudea clypearis* (sic), Dantzig, BRISCHKE, Schr. Ges. Danz. (2) vii, Heft i, p. 7, n. sp.

Monoblastus angulatus, Sweden, THOMSON, Opusc. ent. xii, p. 1256, n. sp.

Polyblastus macrocentrus, *pullicoxa*, Sweden, THOMSON, Opusc. ent. xii, p. 1257, n. spp.

Cucotropa defined, with *C. sericea*, Sweden, THOMSON, Opusc. ent. xii, p. 1259, n. sp.

Grypocentrus lucidus, Dantzig, BRISCHKE, Schr. Ges. Danz. (2) vii, Heft i, p. 11, n. sp.

Euceros superbus, Munich, KRIECHBAUMER, pp. 199 & 353, Ent. Nachr. xiv, n. sp.

Adelognathus nigricaps, France, p. 1274, *limbatus*, Finland, p. 1275,

dimidiatus, nigricornis, France, p. 1276, *pilosus*, Sweden, p. 1277, THOMSON, Opusc. ent. xii, n. spp.

Ecenterus larinus, Sweden, THOMSON, Opusc. ent. xii, p. 1254, n. sp.

Euriproctus coxalis, Calabria, COSTA, Rend. Acc. Nap. (2) ii, p. 106, n. sp.

Orthocentrus pirasii, Sardinia, COSTA, Atti Acc. Napoli (2) ii, No. 7, p. 16; *O. nigricoxus*, Ottawa, PROVANCHER, p. 369, Add. Hym. Queb. : n. spp.

Bassus festatorius, Sicily, COSTA, Rend. Acc. Nap. (2) ii, p. 106; *B. aciculatus*, p. 368, *auriculatus, mellipes*, p. 429, N. America, PROVANCHER, Add. Hym. Queb. : n. spp.

Erochus lucidus, I. of Ustica, RIGGIO & DE STEFANI-PEREZ, Nat. Sicil. vii, p. 148, pl. i, fig. 5, n. sp.

Pimplides.

Thalessa lunator, habits, oviposition, structure of ovipositor, metamorphoses; RILEY, *Ins. Life*, i, pp. 168-179, figs. 36-39: the sexes and metamorphoses figured, pl. i: nuptials of; HARRINGTON, Rep. E. Soc. Ont. xviii, pp. 25-27.

Acoenites saltans and *ruficornis*, p. 338, *rufipes*, Gr., p. 339, notes on; KRIECHBAUMER, Ent. Nachr. xiv.

Coleocentrus croceicornis, Gr., ♀ described; BRAUNS, p. 8, MT. schw. ent. Ges. viii.

Pimplariæ, analytical table of the European genera; SCHMIEDEKNECHT, Zool. Jahrb. iii, Syst. Abth. pp. 419-444.

Troctocerus, n. g., for *T. elegans*, n. sp., Germany; SCHMIEDEKNECHT, p. 427, Zool. Jahrb. iii, Syst. Abth.

Taschenbergia, n. g., for *Mesoleptus modestus*, Gr.; SCHMIEDEKNECHT, p. 437, Zool. Jahrb. iii, Syst. Abth.

Pimpla: monograph of the European species; SCHMIEDEKNECHT, Zool. Jahrb. iii, Syst. Abth. pp. 445-542. *P. scanica*, hyperparasitic; BIGNELL, Ent. xxi, p. 140. *P. annulipes*, Br., figured, pl. ii, fig. 7, habits, p. 95; RILEY, Rep. 1887. *P. oculatoria*, Fab., and *turionellæ*, L., varr. described; COSTA, Atti Acc. Napoli (2) ii, No. 7, p. 22.

P. moraguesi, Balearic Is., p. 479, *holmgreni* (= *graminellæ*, Holm.), p. 502, *limneriaformis*, Thuringia, p. 532, SCHMIEDEKNECHT, Zool. Jahrb. iii, Syst. Abth.; *P. varicauda*, England, CAPRON, Ent. M. M. xxiv, p. 217; *P. cercopithecus*, *apricaria*, *cingulatella* (cf. also *op. cit.* (2) ii, No. 7, p. 23), Sardinia, COSTA, p. 25, Atti Acc. Napoli (2) i, No. 13; *P. glandaria*, Sardinia, *id. op. cit.* (2) ii, No. 7, p. 21; *P. schmiedeknechti*, Corfu, KRIECHBAUMER, Ent. Nachr. xiv, p. 339; *P. jason*, Colombia, CAMERON, p. 176, Mem. Soc. Manch. (4) i : n. spp.

Ephialtes parallelus, p. 1248, *heteropus*, p. 1249, Sweden, THOMSON, Opusc. ent. xii, n. spp.

Polysphincta, habits of the species; HOWARD, *Ins. Life*, i, p. 42.

P. dictyne, N. America, HOWARD, *Ins. Life*, i, p. 107, fig. 21; *P. caudata*, p. 1253, *picticollis*, p. 1254, Sweden, THOMSON, Opusc. ent. xii : n. spp.

Glypta lycorinoides, Sardinia, COSTA, Atti Acc. Napoli (2) ii, No. 8, p. 33; *G. phocopteridis*, N. America, WEED, Ent. Am. iv, p. 157 : n. spp.

Phytodietus superbus, p. 430, *elegans*, *ornatus*, p. 431, Trinidad, PROVANCHER, Add. Hym. Queb., n. spp.

Lissonota bistrigata, Holmg., note on ♂; COSTA, Atti Acc. Napoli (2) ii, No. 7.

L. irrigua, Sweden, THOMSON, Opusc. ent. xii, p. 1248; *L. tristis*, Hela, BRISCHKE, Schr. Ges. Danz. (2) vii, p. 57; *L. steckii*, p. 1, *lunigera*, p. 2, Switzerland, BRAUNS, MT. schw. ent. Ges. viii; *L. albicoxis*, Austria, KRIECHBAUMER, Ann. Hofmuseum Wien, iii, p. 35; *L. maculipennis*, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 101; *L. pectoralis*, Sardinia, *id.* p. 26, *op. cit.* No. 26; *L. bipartita*, p. 19, *sternalis*, *clypeuris*, p. 20, *rufina*, p. 21, Sardinia, *id. op. cit.* ii, No. 7; *L. maculiceps*, Amazona, CAMERON, P. Manch. Soc. xxvi, p. 131 : n. spp.

Poemenia notata, Hgr., characters of; KRIECHBAUMER, Ent. Nachr. xiv, p. 337.

Meniscus ashmeadii, Florida, PROVANCHER, p. 430, Add. Hym. Queb., n. sp.

Euxorides vancouveriensis, N. America, PROVANCHER, p. 369, Add. Hym. Queb., n. sp.

In the Zool. Rec. vi, 1869, p. 303, only the title of Foerster's Synopsis der Familien und Gattungen der Ichneumoniden was recorded. As the new names contained therein are gradually being brought into use by entomologists, and as they do not appear in any published list of zoological genera, it is thought advisable to record them at the present time. It must not be supposed that by so doing any opinion is expressed as to the wisdom, or even the legitimacy, of the course pursued by Foerster in proposing such a large number of new genera merely in the form of brief tables of characters without any reference whatever to the species of which the genera must consist.

FOERSTER, in the Synopsis in question, Verh. Ver. Rheinl. xxv, pp. 135–221, divides the Ichneumonidæ into the following 36 families; in each family only the new names are recorded here:—

1.—Fam. Anomaloidæ; with *Aphanistes*, *Camposcopus*, *Habronyz*, *Schizopoma*, p. 145, *Erigorgus*, *Sympratis*, *Barylypa*, *Laphyctes*, *Labro-rychus*, *Atrometus*, *Agrypus*, p. 146, FOERSTER, t. c., n. gg.

2.—Fam. Trachynotoide; with *Eugnomus*, p. 147, FOERSTER, t. c., n. gg.

3.—Fam. Porizonoidæ; with *Probles*, *Proedrus*, *Barycnemis*, *Allophrys*, *Sathropterus*, *Aneucelis*, p. 147, *Leptopygus*, *Heterocola*, *Ischnobatis*, *Phradis*, *Eutomus*, *Astrenis*, *Isurgus*, *Gonolochus*, *Temelucha*, p. 148, *Epistathmus*, *Diaparsis*, p. 149, FOERSTER, t. c., n. gg.

4, 5, & 6.—Fam. Pristomeroidæ, Cremastoidæ, Helwigoidæ (without any new genera), p. 149.

7.—Fam. Ophionoidæ; with *Cidaphus*, p. 149, *Parabates*, *Allocampylus*, *Eremotylus*, p. 150, FOERSTER, t. c., n. gg.

8.—Fam. Campoplegoide; with *Odontopsis*, p. 150, *Echthronomas*, *Zuchresta*, *Amorphota*, *Thymaris*, *Symplecis*, *Olethrodotis*, *Rhythmonotus*, p. 151, *Campotrophus*, *Horogenes*, *Alcima*, *Hyposoter*, *Gnathochorisis*,

Eripternus, *Nepiesta*, *Zaporus*, p. 152, *Gonotypus*, *Dioratica*, *Phadroctonus*, *Diocles*, *Eriborus*, *Nythobia*, *Olesicampe*, *Rhinphoctona*, *Diadegma*, *Sinophorus*, p. 153, *Omoborus*, *Ecephora*, *Anempheres*, *Idechthis*, *Lathrostictus*, *Lathroplex*, *Omorgus*, p. 154, *Pantropa*, *Asinamora*, *Synetaeris*, *Spudastictus*, *Dolophron*, *Dimophora*, p. 155, *Nepiera*, *Hypothereutes*, *Phobocampe*, *Ischnoscopus*, *Rhezineura*, *Bathyplectes*, p. 156, *Tranosema*, *Campoletis*, *Callidora*, *Holocremnus*, *Anilastus*, *Ameloctonus*, p. 157, FOERSTER, t. c., n. gg.

9.—Fam. *Banchoidæ*, p. 157; with *Ithagenes*, *Xenoschesis*, *Semnophrys*, p. 158, *Cidaphurus*, p. 159, FOERSTER, t. c., n. gg.

10.—Fam. *Metopioideæ*.

11.—Fam. *Orthocentroideæ*; with *Synoplus*, *Mnesidacus*, *Picrostigenus*, *Brephoctonus*, *Hypoleptus*, p. 159, *Deleter*, *Tapinops*, *Atmetus*, *Phanosemas*, *Stenomacrus*, *Camartops*, p. 160, FOERSTER, t. c., n. gg.

12.—Fam. *Ezochoideæ*; with *Oligoplectron*, *Alcocerus*, *Triclistus*, *Ameosyltus*, *Metacolus*, *Polyclistus*, p. 161, FOERSTER, t. c., n. gg.

13.—Fam. *Trachydermatoideæ*, p. 161.

14.—Fam. *Bassoideæ*: with *Promethes*, *Bioblapsis*, *Liopsis*, *Zootrophes*, *Syrphoctonus*, *Anitrophron*, *Phthorina*, *Enizemum*, *Homotropus*, p. 162, FOERSTER, t. c., n. gg.

15.—Fam. *Pimplioideæ*, p. 162; with *Idiogramma*, *Stilbops*, *Odinophora*, p. 163, *Hoplitophrys*, *Telutaea*, *Delomerista*, *Tromatobia*, *Tranera*, *Apechthis*, *Ezeriste*, *Iseropus*, *Epiurus*, *Hoplectis*, p. 164, *Erenoschila*, *Ctenochira*, *Conoblasta*, *Diblastomorpha*, *Panteles*, p. 165, *Oxyrrhepis*, *Zutypota*, *Zaglyptus*, p. 166, FOERSTER, t. c., n. gg.

16.—Fam. *Lissonotoideæ*; with *Asphragis*, *Hybophanes*, *Aphonodons*, *Bothynophrys*, p. 166, *Diceratops*, *Ensimus*, *Syzeuctus*, *Xenacis*, *Amersibia*, *Bathycetes*, *Alloplasta*, p. 167, FOERSTER, t. c., n. gg.

17.—Fam. *Acoenitoideæ*; with *Procinetus*, p. 167, *Mesoclistus*, *Aphanoroptrum*, *Phenolobus*, *Chorischizus*, *Asthenomeris*, p. 168, FOERSTER, t. c., n. gg.

18.—Fam. *Xoridoideæ*, p. 168; with *Perosis*, *Calliclisis*, *Xylophrurus*, *Sterotrichus*, *Gonophonus*, *Xylonomus*, *Moerophora*, *Sichelia*, p. 169, *Rhadina*, p. 170, FOERSTER, t. c., n. gg.

19.—Fam. *Sphinctoideæ*, p. 170.

20.—Fam. *Mesochorideæ*; with *Plesiophthodmus*, *Astiphromma*, p. 170, FOERSTER, t. c., n. gg.

21.—Fam. *Agriotypoidæ*, p. 170.

22.—Fam. *Plectiscoidæ*; with *Catastenus*, *Aprileptus*, p. 170, *Holomeristus*, *Entypoma*, *Blapticus*, *Dialipsis*, *Miomermis*, *Idiorenus*, *Dicolus*, *Apoclima*, *Arctente*, *Polyaulon*, p. 171, *Hemiphanes*, *Myriarthrus*, *Eustirrus*, *Proclitus*, p. 172, FOERSTER, t. c., n. gg.

23.—Fam. *Peromachoidæ*; with *Thaumatotypus*, *Cremnodes*, *Apterophygus*, *Chamerpes*, *Agrothereutes*, p. 172, *Aptesis*, *Therescopus*, *Pezolochus*, p. 173, FOERSTER, t. c., n. gg.

24.—Fam. *Hemiteioideæ*; with *Chirotica*, *Allocota*, *Spinolia*, *Syneches*, *Catalytus*, *Gnyphetomorpha*, p. 173, *Xenolytus*, *Otaustes*, *Carnomeris*, *Acrolyta*, *Gunopaches*, *Tristes*, *Pemon*, *Trisacca*, p. 174, *Ischnurgops*, *Steganops*, *Ischyraeis*, *Astomaspis*, *Microplex*, *Lysibia*, *Daictora*, *Aclastus*,

Opisthostenus, *Athenoptera*, p. 175, *Styggera*, *Diaglypta*, *Habromma*, *Plesiomma*, *Bathythrix*, *Alegina*, *Daictes*, *Strepsimallus*, *Aenopler*, *Mastrus*, *Lymeon*, *Paraphylax*, p. 176, *Rhadiurgus*, *Aschistus*, *Tolmerus*, *Rhadinocera*, *Isadelphus*, *Blapsidotes*, *Allomacrus*, *Philonymmus*, p. 177, *Barydotira*, *Pantolipa*, *Microtorus*, *Orthizema*, *Chriodes*, *Agasthenes*, p. 178, *Xenobrachys*, *Brachycephalus*, *Naëtes*, *Ilapinastes*, *Gnotus*, *Itamus*, *Endelus*, *Idemum*, *Phatnacra*, p. 179, *Ethelurgus*, *Zoophithorus*, *Diatora*, *Encrates*, *Adiastola*, *Isidromas*, *Ocymorus*, *Urithreptus*, *Eriplanus*, p. 180, *Isocresta*, *Charitopes*, p. 181, FOERSTER, t. c., n. gg.

25.—Fam. *Phygadeuontoideæ*; with *Stibeutes*, *Pezoporus*, *Phyrtus*, *Chamoezelus*, *Pammicra*, *Glyphicnemis*, *Thysiotorus*, p. 181, *Apsilops*, *Panargyrops*, *Leptodemas*, *Oxytænia*, *Isolima*, *Stiboscopus*, *Bathymelis*, *Iselir*, *Homelys*, p. 182, *Polytribax*, *Ernoctona*, *Plesignathus*, *Micromonodon*, *Heterotypus*, *Dupanus*, *Hedylus*, *Dirophanes*, *Tricholinum*, p. 183, *Zaphleges*, *Endasys*, *Baryntica*, *Giraudia*, *Schenkia*, *Rhembobius*, *Colocnema*, *Ecporthetor*, *Neleophron*, p. 184, *Epiphobus*, *Ecpaglus*, *Odontoneura*, *Ulothymus*, *Opidnus*, *Homotherus*, *Pammachus*, *Terpiphora*, *Scinacopus*, *Medophron*, *Phyzelus*, p. 185, *Bachia*, *Nuneschen*, *Demopheles*, p. 186, FOERSTER, t. c., n. gg.

26. Fam. *Cryptoideæ*; with *Helcostizus*, *Meringopus*, *Xenodocon*, *Megaplectes*, p. 186, *Sobas*, *Nyzeophilus*, *Trychosis*, *Aritranis*, *Kaltenbachia*, *Charetymma*, *Hidryla*, p. 187, *Gambrus*, *Itamoplex*, *Idiolipa*, p. 188, FOERSTER, t. c., n. gg.

27.—Fam. *Trogoidæ*; with *Dinotomus*, p. 188, FOERSTER, t. c., n. gg.

28.—Fam. *Stilpnoidæ*, p. 188; with *Xestophyes*, *Delolytus*, *Polyrhembia*, *Ezolytus*, p. 189, FOERSTER, t. c., n. gg.

29.—Fam. *Ichneumonoidæ*, p. 189; with *Peritenius*, *Pterocormus*, *Idiostolis*, *Hypomecus*, p. 190, *Ctenochares*, p. 191, FOERSTER, t. c., n. gg.

30.—Fam. *Phaogenoidæ*; with *Diacritus*, p. 191, *Diaschiaspis*, *Epitomus*, *Rheridermus*, *Tycherus*, p. 192, *Holocrepis*, *Deloglyptus*, *Micrope*, *Eparces*, *Eriplatys*, *Anopiasta*, p. 193, *Beosemus*, *Notosemus*, p. 194, FOERSTER, t. c., n. gg.

31.—Fam. *Alomyoidæ*, p. 194.

32.—Fam. *Listrodromoidæ*; with *Neotypus*, p. 194, FOERSTER, t. c., n. gg.

33.—Fam. *Exenteroidæ*; with *Anisoctenion*, *Tricamptus*, p. 194, *Eridolius*, *Microplectron*, *Picroscopus*, *Diaborus*, *Anecphysis*, *Adenonyx*, p. 195, FOERSTER, t. c., n. gg.

34.—Fam. *Ctenopelmoidæ*; with *Rhorus*, *Labroctonus*, p. 195, *Octophorus*, *Sympherta*, *Phrudus*, *Ecsetesis*, *Trichocalymma*, *Ctenacme*, *Lathrolestes*, *Scopiorus*, p. 196, FOERSTER, t. c., n. gg.

35. — Fam. *Mesoleptoidæ*; with *Spanotecnus*, *Ichneope*, *Polyoncus*, *Syncholeter*, *Laphyrosopus*, *Perilissus*, p. 197, *Polycinetus*, *Homaspis*, *Prosmorus*, *Catoglyptus*, *Gausocentrus*, *Lathiponus*, *Phobetes*, *Homalommo*, *Hypocryptus*, *Rhaestes*, *Stiphrosomus*, p. 198, *Dizemon*, *Callidiotes*, *Ipoctonus*, *Hadrodactylus*, *Alexeter*, *Oxytorus*, *Symphobus*, p. 199, *Zemiodes*, *Teroxon*, *Himerta*, *Genarches*, *Diëdrus*, *Neleothymus*, *Asymmiclus*, *Clepsiorthus*, p. 200, FOERSTER, t. c., n. gg.

36.—Fam. *Tryphonoidæ*; with *Synæma*, *Notomeris*, *Cnemischys*, *Campo-*

threptus, *Ecclinops*, *Otoblastus*, *Protarchus*, *Dyspeles*, p. 201, *Rhimphalea*, *Eryma*, *Eriglaea*, *Labrossyla*, *Polytrera*, *Gnesia*, *Udenia*, *Otlophorus*, *Hodostates*, p. 202, *Synagrypnus*, *Homobia*, *Zemiophora*, *Synoscetes*, *Amorphognathon*, *Celococonus*, *Cosmoconus*, *Psilosage*, *Otitochilus*, p. 203, *Symboethus*, *Neleges*, *Polyrhysia*, *Narcopæa*, *Isodicta*, *Neales*, *Zacalles*, p. 204, *Perispuda*, *Zaplethis*, *Alcochera*, *Apimeles*, *Laepserus*, *Epachthes*, *Lagurotia*, *Daspletin*, *Azelus*, *Adranes*, p. 205, *Zaphthoru*, *Adezioma*, *Lamachus*, *Trophoctonus*, *Synomelix*, *Gastroporus*, *Pantorhæster*, *Zapedias*, *Dialges*, *Zemiophron*, p. 206, *Oneista*, *Dysautes*, *Noemon*, *Paraplesius*, *Trysicampe*, *Nythophona*, *Aeolometis*, p. 207, *Polypystis*, *Xenonastes*, *Sychnoportus*, *Asthenara*, *Camporhynchus*, *Trapezochora*, *Rhigelus*, *Cacotropa*, p. 208, *Philotymma*, *Scopesia*, *Syndipmus*, *Listrota*, *Tlemon*, *Polyterus*, *Atrestes*, *Campogenes*, *Aselasma*, *Pantoporthus*, p. 209, *Campoporus*, *Syntactus*, *Culliphurus*, *Boëthus*, *Saotis*, *Tromopæa*, *Alithusus*, *Hybristes*, *Ezacrodus*, *Tachyporthus*, *Hyperallus*, *Hyperbutus*, p. 210, *Scoparches*, *Gemophaga*, *Allocritus*, *Enæcetes*, *Synodites*, *Spudæa*, *Rhinotorus*, p. 211, *Camponastes*, *Tuutozelus*, *Hypamblys*, *Phæstus*, *Phagesorus*, *Sarcorychus*, *Apystus*, *Dolicoctonus*, *Barytarbes*, p. 212, *Holmgrenia*, *Lathrophagus*, *Campodorus*, p. 213, FOERSTER, t. c., n. gg.

BRACONIDÆ.

MARSHALL (555) commences a monograph of the European and Algerian species, of which have at present appeared: preface, 10 pp.; general description of the external parts, pp. 1-30; metamorphoses, pp. 30-38; the perfect insect and habits, pp. 38-46; geographical distribution, pp. 46-48; bibliographical list, pp. 49-62; systematic descriptions, pp. 63-324.

PROVANCHER changes the generic position of several species previously described by him; Add. Hym. Queb. pp. 370-396.

Bracon brevicornis reared from *Ephesia kuhniel'a*; BILLUPS, P. E. Soc. 1888, p. xxviii.

B. siculus, Palermo, p. 85, *traculator*, Italy, p. 92, *illyricus*, Albania, p. 154, MARSHALL, Spec. Hym. iv; *B. geniculator*, *humulator*, Sardinia, COSTA, p. 27, Atti Acc. Napoli (2) i, No. 13; *B. uromelas*, Sardinia, *fili-cauda*, Sicily, *id.*, Rend. Acc. Nap. (2) ii, p. 107; *B. auripes*, Ottawa, *sanguineus*, *angelesius*, p. 372, *politus*, p. 373, California, *pilosipes*, Trinidad, p. 431, *striatus*, Vancouver, p. 432, PROVANCHER, Add. Hym. Queb.; *B. dolichoura*, Bogota, CAMERON, p. 176, Mem. Soc. Manch. (4) i: n. spp.

Iphiaulax americanus, Canada, PROVANCHER, Add. Hym. Queb., n. sp.

Vipio phænis, Sarepta, MARSHALL, p. 74, Spec. Hym. iv, n. sp.

Doryctes brachyurus, Hungary, MARSHALL, p. 238, Spec. Hym. iv; *D. pallipes*, Canada, PROVANCHER, p. 375, Add. Hym. Queb.: n. spp.

Dendrosoter sicanus, Sicily, p. 243, *ferrugineus*, France, p. 247, MARSHALL, Spec. Hym. iv, n. spp.

Sigalphus caledonicus, Scotland, MARSHALL, p. 317, Spec. Hym. iv, n. sp.

Apanteles ferrugineus, bred from *Clio phragmitellus* and *Macrogaster arundinis*; BRIDGMAN, Ent. M. M. xxv, p. 67. *A. zygannarum*, Marsh.,

bred from *Melitæa aurinia*, p. 57, figured, pl. ii, fig. 7; P. S. Lond. E. Soc. 1887. *A. limenitidis*, habits; WEED, Ent. Am. iv, p. 149.

Acrisis clavipes (Reinhard), Germany, MARSHALL, p. 212, Spec. Hym. iv, n. sp.

Telebolus, n. g., p. 202 (*Hecabolidae*), for *T. corsicus*, n. sp., Corsica, p. 203; MARSHALL, Spec. Hym. iv.

Euchasmus, n. g. (*Hecabolidae*), for *E. exiguus*, n. sp., England; MARSHALL, p. 211, Spec. Hym. iv.

Chelonus minutus, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 57; *C. filicornis*, New Mexico, CAMERON, P. Manch. Soc. xxvi, p. 135: n. spp.

Meteorus splendens, scutatus, Sardinia, COSTA, p. 26, Atti Acc. Napoli (2) i, No. 13, n. sp.

Dinocampus pallidipes, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 13, p. 27, n. sp.

Centistes americana, habits, figure; RILEY, Ins. Life, i, pp. 101-104, figs. 14 & 15.

Eubadizon schizoceri figured; Ins. Life, i, p. 44, fig. 8.

E. californicus, Los Angeles, PROVANCHER, p. 383, Add. Hym. Queb., n. sp.

Perilitus nigrinus, Canada, PROVANCHER, p. 379, Add. Hym. Queb., n. sp.

Blacus cuneatus, Canada, PROVANCHER, p. 383, Add. Hym. Queb., n. sp.

Macrocentrus marginator, Ns., bred from *Sesia sphegiformis*, p. 50, figured, pl. ii, fig. 8; P. S. Lond. E. Soc. 1887. *M. delicatus*, Cress., figured, pl. ii, fig. 8; RILEY, Rep. 1887.

M. procerus, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 13, p. 27; *M. aciculatus*, California, PROVANCHER, p. 380, Add. Hym. Queb.: n. spp.

Zeles basalis, California, PROVANCHER, p. 380, Add. Hym. Queb., n. sp.

Opius niger, p. 381, *variabilis*, Canada, *nanus*, California, p. 382, PROVANCHER, Add. Hym. Queb., n. spp.

Rhogas gasterator, Jur., *tristis*, Wesm., *testaceus*, Spin., noticed, pp. 28 & 29, *reticulatus* var. *atripes* described, p. 28; COSTA, Atti Acc. Napoli (2) i, No. 13. *R. fumipennis*, habits; WEED, Ent. Am. iv, p. 148.

R. basalis, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 13, p. 29; *R. rugosulus*, Canada, PROVANCHER, p. 374, Add. Hym. Queb.: n. spp.

Crypturus argiolus, Gr., = (*Tryphon flavitarsis*, Costa); *T. nigricarpus* referred to *Cteniscus*; KRIECHBAUMER, p. 211, Ent. Nachr. xiv. *C. sculus*, fully described, p. 7, figured, pl. i, fig. 6; COSTA, Atti Acc. Napoli (2) i, No. 10.

Megastylus multicolor, fully described, p. 8, figured, pl. i, fig. 7; COSTA, Atti Acc. Napoli (2) i, No. 10.

Agathus imperialis, note on; COSTA, Rend. Acc. Nap. (2) ii, p. 108: fully described, p. 9, figured, pl. i, fig. 8, Atti Acc. Napoli (2) i, No. 10.

Microplitis maturus, p. 294, *terminatus*, p. 295, N. America, WEED, Tr. Am. Ent. Soc. xv, n. spp.

Microgaster carduicola, Pack., referred to *Apanteles* and redescribed; WEED, p. 296, Tr. Am. Ent. Soc. xv.

M. fucetosus, N. America, WEED, p. 296, Tr. Am. Ent. Soc. xv; *M. rubricoxus*, p. 386, *crenulatus*, p. 387, Canada, PROVANCHER, Add. Hym. Queb.: n. spp.

- Alysia fossulata*, California, PROVANCHER, p. 391, Add. Hym. Queb., n. sp.
Phanocarpa rubriceps, Canada, PROVANCHER, p. 392, Add. Hym. Queb., n. sp.
Aspilota astigma, Canada, PROVANCHER, p. 393, Add. Hym. Queb., n. sp.
Prosapha hyalina, Ottawa, PROVANCHER, p. 393, Add. Hym. Queb., n. sp.
Enone sericea, Ottawa, PROVANCHER, p. 394, Add. Hym. Queb., n. sp.
Scotoneurus dives, ♀, = (*Ephedrus incompletus*, Prov.) ; PROVANCHER, p. 395, Add. Hym. Queb.
Aphidius nigrovarius, California, PROVANCHER, p. 396, Add. Hym. Queb., n. sp.
Aphidaria, characters amended ; PROVANCHER, p. 396, Add. Hym. Queb.
A. basilaris, California, PROVANCHER, l. c., n. sp.
Ropronia, Prov., referred to *Prototrupidus* ; PROVANCHER, p. 406, Add. Hym. Queb.

EVANIIDÆ.

- Aulacus flavipennis*, Ceylon, CAMERON, P. Soc. Manch. xxvi, p. 134, n. sp.
Gasteruption orientale, Bengal, CAMERON, p. 177, Mem. Soc. Manch. (4) i ; *G. japonicum*, Japan, id. P. Soc. Manch. xxvi, p. 133 : n. spp.
Evania splendidula, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 56 ; *E. dorsalis*, pl. xvii, fig. 24, *crassa*, pl. xviii, fig. 2, Panama, *guatemalensis*, Guatemala, p. 433, CAMERON, Biol. Centr. Am. Hym. : n. spp.
Fœnus rugidorsum, Sardinia, COSTA, p. 22, Atti Acc. Napoli (2) i, No. 13, n. sp.

CHALCIDIDÆ.

Notes on the morphology of ; HOWARD, P. E. Soc. Wash. i, pp. 65-74.

- Leucospis sardoa*, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 57, n. sp.
Aspidocoris cyaneus, redescribed and habits noticed ; COSTA, Atti Acc. Napoli (2) ii, No. 8, p. 35.
Chalcidinae, generic table of ; ASHMEAD (20).
Diplodontia, n. g. (without species) ; ASHMEAD, Ent. Am. iv, p. 87.
Metadontia, n. g. (without species) ; ASHMEAD, Ent. Am. iv, p. 87.
Chalcis mikado, Japan, CAMERON, P. Soc. Manch. xxvi, p. 117, n. sp.
Halticella tinctipennis, Japan, CAMERON, P. Soc. Manch. xxvi, p. 118, n. sp.
Epitranus erythrogaster, Japan, CAMERON, P. Soc. Manch. xxvi, p. 119, n. sp.
Orazema violacea, p. 187, *minuta*, p. 188, Florida, ASHMEAD, Ent. Am. iii, n. spp.
Lophyrocera floridana, Florida, ASHMEAD, Ent. Am. iii, p. 187, n. sp.
The following new genera of *Eurytominae* are proposed in tabular form

by ASHMEAD (18), pp. 42 & 43, no species belonging to them being indicated: *Eudecatoma*, *Xunthosoma*, *Decatomitea*, *Eurytomocharis*, *Phylloxerorus*, *Bruchophagus*, *Systolodes*, *Evoxyoma*, *Isosomorpha*, *Isosomocharis*, *Isosomodes*.

Eurytoma abrotani, Ill., frequenting orchids of the genus *Cuttleja*; CHAVAGNAC, Rev. Sci. Bourb. i, p. 15. *E. gigantea*, Walsh, = (*conica*, Prov.); PROVANCHER, p. 438, Add. Hym. Queb.

Perilampus stygicus, Canada, PROVANCHER, p. 406, Add. Hym. Queb., n. sp.

Isosoma hordei, Har., = (*Decatoma basilaris*, Prov.); PROVANCHER, p. 438, Add. Hym. Queb. *I. orchidearum*, habits; RILEY, Ins. Life, i, p. 121.

Monodontomerus usticensis, I. of Ustica; RIGGIO & DE STEFANI-PEREZ, Nat. Sicil. vii, p. 148, pl. i, fig. 4, n. sp.

Oligostenus stigma, Fab., = (*Monodontomerus viridiceneus*, Prov.); PROVANCHER, p. 438, Add. Hym. Queb.

Panthalis, n. g., p. 121, for *P. blackburni*, n. sp., S. Australia, p. 122; CAMERON, P. Soc. Manch. xxvi.

Belonea erythropoda, S. Australia, CAMERON, P. Soc. Manch. xxvi, p. 122, n. sp.

Bactyrischion bicoloratum, varietal note; COSTA, p. 35, Atti Acc. Napoli (2) ii, No. 8.

Copidosoma variegatum, N. America, HOWARD, Ins. Life, i, p. 197, n. sp.

Aphyus niger, *chrysopæ*, *unicolor*, Florida, ASHMEAD, Ent. Am. iv, p. 15, n. spp.

Leptomastix tineavora, Florida, ASHMEAD, Ent. Am. iv, p. 16, n. sp.

Prionomastix americana, Florida, ASHMEAD, Ent. Am. iv, p. 16, n. sp.

Psilophrys armatus, *pulchripennis*, Florida, ASHMEAD, Ent. Am. iv, p. 16,

n. spp.

Comys cyanea, Florida, ASHMEAD, Ent. Am. iv, p. 17, n. sp.

Mira longipennis, Florida, ASHMEAD, Ent. Am. iv, p. 17, n. sp.

Phænodiscus armatus, Florida, ASHMEAD, Ent. Am. iv, p. 17, n. sp.

Dinocarsis pulcher, Florida, ASHMEAD, Ent. Am. iv, p. 17, n. sp.

Choreia flavicincta, Florida, ASHMEAD, Ent. Am. iv, p. 17, n. sp.

Arrhenophagus, n. g., p. 144, for *A. chionaspidis*, n. sp., Sweden, on *Chionaspis salicis*, p. 146, pl. i, figs. 1-9; AURIVILLIUS, Ent. Tidskr. ix.

Rileya, n. g., for *R. splendens*, n. sp., California; HOWARD, p. 194, Canad. Ent. xx.

Rileya splendens, n. g. & sp., informal description of genus and species; ASHMEAD, Ent. Am. iv, p. 80; see also Canad. Ent. xx, p. 229.

Encyrtus montinus, Pack., note on; HOWARD, P. E. Soc. Wash. i, p. 91.

E. pyralidis, Florida, ASHMEAD, Ent. Am. iii, p. 16, n. sp.

Eupelmus albitarsis, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 101, n. sp.

Cleonymus superbus, Canada, PROVANCHER, p. 407, Add. Hym. Queb., n. sp.

Merisus destructor, bred from *Cecidomyia destructor*, in England; ENOCK, P. E. Soc. 1888, p. xxiii.

Rhopalicus pallipes (sic), Canada, PROVANCHER, p. 407, Add. Hym. Queb., n. spp.

Caratomus leucophthalmus, Canada, ASHMEAD, p. 55, Canad. Ent. xx, n. sp.

Chiropachides, table of the genera of; ASHMEAD, p. 173, Canad. Ent. xx.

Chiropachys nigrocyaneus, Norton, referred to *Pachyneuron*; ASHMEAD, p. 175, Canad. Ent. xx. *C. quadrum*, Fab., figured, pl. ii, fig. 6, P. S. Lond. E. Soc. 1887.

Dasyglenes, n. g., for *D. osmiae*, n. sp., N. America; ASHMEAD, p. 174, Canad. Ent. xx.

Dinotus elongatus, N. America, ASHMEAD, p. 175, Canad. Ent. xx.

Brachycrepis, n. g., for *B. tricarinatus*, n. sp., Kansas; ASHMEAD, p. 175, Canad. Ent. xx.

Eulophus ramicornis, habits, parasitic on *Phytonomus rumicis*; DECAUX, Feuille. Nat. xviii, p. 97.

Astichus arizonensis, Arizona, ASHMEAD, Canad. Ent. xx, p. 101, n. sp.

Holcoppelte missouriensis, *popenosi*, p. 101, *floridana*, *microgaster*, p. 102, N. America, ASHMEAD, Canad. Ent. xx, n. spp.

Pleurotropis leucopus, Florida, ASHMEAD, p. 102, Canad. Ent. xx, n. sp.

Entedon albitarsis, p. 102, *arizonensis*, *columbiana*, p. 103, N. America, ASHMEAD, Canad. Ent. xx, n. spp.

Asecodes albitarsis, N. America, ASHMEAD, p. 103, Canad. Ent. xx, n. sp.

Omphale bicinctus, Florida, ASHMEAD, p. 103, Canad. Ent. xx, n. sp.

Closterocerus cinctipennis, N. America, ASHMEAD, p. 104, Canad. Ent. xx, n. sp.

Anozus siphonophoræ, N. America, ASHMEAD, p. 104, Canad. Ent. xx, n. sp.

Euderus columbiana, N. America, ASHMEAD, p. 104, Canad. Ent. xx, n. sp.

Hyperteles hylotomæ, Canada, ASHMEAD, p. 105, Canad. Ent. xx, n. sp.

Aprostocetus granulatus, p. 105, *canadensis*, *americana*, p. 106, N. America, ASHMEAD, Canad. Ent. xx, n. spp.

Trichogramma acuminatum, *nigrum*, *ceresarum*, N. America, ASHMEAD, p. 107, Canad. Ent. xx, n. spp.

PROCTOTRUPIDÆ.

Epyris orientalis, Bengal, *hispanicus*, p. 169, *apterus*, p. 171, Gibraltar, *tricolor*, S. England, p. 172, *rufipes*, but altered in errata to *montezumæ*, p. 173, *punctatus*, p. 174, Mexico, CAMERON, Mem. Soc. Manch. (4) i; *E. rugifrons*, Guatemala, pl. xix, fig. 12, p. 449, *corallis*, *erythrops*, fig. 14, p. 450, *nitidiceps*, p. 17, Panama, *viridis*, fig. 16, Guatemala, p. 451, *testaceipes*, fig. 18, *multicarinatus*, p. 452, fig. 13, *bagabensis*, fig. 19, Panama, *guatemalensis*, fig. 20, Guatemala, p. 453, CAMERON, Biol. Centr. Am. Hym. : n. spp.

Gonatopus testaceus, pl. xviii, figs. 22 & 23, p. 440, *palliditarsis*, fig. 21,

albomarginatus, pl. xix, fig. 1, p. 441, *orbitalis*, fig. 3, p. 442, *dromedarius*, fig. 2, *apicalis*, fig. 4, p. 443, Panama, CAMERON, Biol. Centr. Am. Hym., n. spp.

Dryinus maculicornis, pl. xix, fig. 5, *alticola*, fig. 6, p. 444, *ruficeps*, fig. 7, p. 445, *melanocephalus*, figs. 15 & 26, *nigricans*, fig. 8, p. 446, *chiriquensis*, fig. 9, Panama, *albitarsis*, fig. 10, Guatemala, p. 447, CAMERON, Biol. Centr. Am. Hym., n. spp.

Apenesia flavipes, Panama, pl. xix, fig. 11, p. 449, CAMERON, Biol. Centr. Am. Hym., n. sp.

Parasierola lata, pl. xix, fig. 21, Panama, *opaca*, fig. 23, p. 454, *pallulitarsis*, fig. 22, p. 455, Guatemala, CAMERON, Biol. Centr. Am. Hym., n. spp.

Mesitius longicollis, Mexico, pl. xix, fig. 24, p. 455, CAMERON, Biol. Centr. Am. Hym., n. sp.

Culyoza (?) *westroodi*, Panama, pl. xix, fig. 25, CAMERON, p. 456, Biol. Centr. Am. Hym., n. sp.

Proctotrupes maculipennis, New Zealand, CAMERON, p. 174, Mem. Soc. Manch. (4) i, n. sp.

? *Teleas*, sp., biology; LEMOINE (496), and p. xvii, Bull. Soc. Ent. Fr. (6) viii.

Telemonus rufoniger, Canada, PROVANCHER, p. 403, Add. Hym. Queb., n. sp.

Trichacis auripes, Canada, PROVANCHER, p. 403, Add. Hym. Queb., n. sp.

Camptotera clavata, Canada, PROVANCHER, p. 404, Add. Hym. Queb., n. sp.

Helorus, Latr., = (*Copelus*, Prov.) ; PROVANCHER, p. 405, Add. Hym. Queb.

Megaspilus harringtoni, Canada, ASHMEAD, Canad. Ent. xx, p. 48, n. sp.

Eumegaspilus, n. g. (*Ceraphroninæ*), for *E. canadensis*, *ottawensis*, n. spp., Canada; ASHMEAD, p. 49, Canad. Ent. xx.

Megaspilidea, n. g., for *M. minuta*, n. sp., Canada; ASHMEAD, p. 49, Canad. Ent. xx.

Acolus canadensis, *borealis*, Canada, ASHMEAD, p. 50, Canad. Ent. xx, n. spp.

Prosacantha brachyptera, Canada, ASHMEAD, Canad. Ent. xx, p. 50, n. sp.

Pentucantha, n. g. (*Scelioninæ*), for *P. canadensis*, n. sp., Canada; ASHMEAD, p. 51, Canad. Ent. xx.

Metacalis erythropus, Canada, ASHMEAD, p. 51, Canad. Ent. xx, n. sp.

Ectadlus canadensis, Canada, ASHMEAD, p. 51, Canad. Ent. xx, n. sp.

Sa. togaster howardii, Washington, ASHMEAD, p. 52, Canad. Ent. xx, n. sp.

Paramesius clavipes, Canada, ASHMEAD, p. 53, Canad. Ent. xx; *P. fasciatipennis*, pl. xviii, fig. 18, p. 437, *maculipennis*, figs. 11 & 12, p. 438, *chiriquensis*, fig. 15, Panama, *canaliculatus*, fig. 24, Mexico, p. 439, CAMERON, Biol. Centr. Am. Hym., n. spp.

Spilomicrus tinclipennis, Panama, CAMERON, pl. xviii, fig. 17, p. 440, Biol. Centr. Am. Hym., n. sp.

Aneurhynchus mellipes, Canada, ASHMEAD, p. 52, Canad. Ent. xx, n. sp.

Loxotropa pezomachoides, harringtoni, armata, Canada, ASHMEAD, p. 53, Canad. Ent. xx, n. spp.

Monelata hirticollis, Canada, ASHMEAD, p. 54, Canad. Ent. xx, n. sp.

Zygota americana, Canada, ASHMEAD, p. 54, Canad. Ent. xx, n. sp.

Platygaster hiemalis, from *Cecidomyia destructor*, in N. America, FORBES, Psyche, v, p. 39, n. sp.

Sclerogibba, n. g., for *S. crassifemorata*, n. sp., I. of Ustica, p. 146, pl. i, fig. 3; RIGGIO & DE STEFANI-PEREZ, Nat. Sicil. vii.

Sparasion pallidinerve, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 58, n. sp.

Scelio erythropoda, Centr. America, CAMERON, p. 436, pl. xviii, fig. 16, Biol. Centr. Am. Hym., n. sp.

Trimorus luteus, Panama, CAMERON, p. 436, pl. xviii, fig. 20, Biol. Centr. Am. Hym., n. sp.

MYMARIDÆ and PELECINIDÆ.

Mymarinae to be removed from *Proctotrupidæ*, to form a n. fam., *Mymaridæ*; ASHMEAD, P. E. Soc. Wash. i, p. 98.

Pelecinus polyturator figured, pl. xviii, figs. 13 & 14; Biol. Centr. Am. Hym. *P. polycerator*, note on; WOODWORTH, Psyche, v, p. 13.

CYNIPIDÆ.

Chilaspis nitida and *lûwii*, the galls of; SCHLECHTENDAL, Wien. ent. Z. vii, pp. 245 & 246.

Periclistus obliquus, California, PROVANCHER, p. 397, Add. Hym. Queb., n. sp.

Ceroptres dorsalis, California, PROVANCHER, p. 398, Add. Hym. Queb., n. sp.

Dimicrostrophis nigricornis, Ottawa, PROVANCHER, p. 436, Add. Hym. Queb., n. sp.

Eucoila gracilicornis, Scotland, CAMERON, p. 168, Mem. Soc. Manch. (4) i; *E. minor*, California, PROVANCHER, p. 398, Add. Hym. Queb.: n. spp.

Kleidotoma psiloides, Westw., = (*bicolor*, Gir.); CAMERON, Ent. M. M. xxiv, p. 209.

K. nigripes, p. 165, *melanopoda*, p. 167, England, *crassiclava*, *caledonica*, p. 166, *striaticollis*, p. 167, Scotland, CAMERON, Mem. Soc. Manch. (4) i, n. spp.

Acothyreus mellipes, Canada, PROVANCHER, p. 438, Add. Hym. Queb., n. sp.

Anacharis rufipes, Westw., = (*dalmanni*, Reinh.); *A. fumipennis*, Westw., referred to *Ægilips*, and redescribed, with tabulation of the British species of *Ægilips*; CAMERON, Ent. M. M. xxiv, p. 209.

Onychia striolata, Bengal, CAMERON, p. 164, Mem. Soc. Manch. (4) i, n. sp.

Phænoglyphis forticornis, Britain, CAMERON, Ent. M. M. xxiv, p. 210, n. sp.

SESSILIVENTRES.

[*Cf.* ANDRÉ (9), BORRIES (90), BRISCHKE (105, 106, 107), CAMERON (128, 130), COSTA (164, 166), JAKOWLEW (416), KONOW (453, 454), LETHIERRY & CARPENTER (500), MAGRETTI (550), MARLATT (551), MEDINA (568, 569), PROVANCHER (686), RILEY (762), THOMSON (883).]

SIRICIDÆ.

Discussion on the relation between *Siricidæ* and *Rhipidorhabdi*; OPPENHEIM, *Palæontogr.* xxxiv, pp. 243-247.

Cephus flavisternum, ♀ described; COSTA, p. 37, *Atti Acc. Napoli* (2) ii, No. 8. *C. parreyssi*, Spin., n. var. *rufiventris*; JAKOWLEW, p. 373, *Hor. Ent. Ross.* xxii.

C. politissimus, Armenia, COSTA, *Rend. Acc. Nap.* (2) ii, p. 108; *C. interruptus*, N. America, PROVANCHER, p. 355, *Add. Hym. Queb.* : n. spp.

Phyllæcus integer, Nort. : natural history, description, its injuries to willows; RILEY, *Ins. Life*, i, pp. 8-11, fig. 2.

Xiphidria camelus, nest noticed; RUDOW, *Soc. Ent.* ii, p. 171.

Tremex columba, habits and metamorphoses; RILEY, *Ins. Life*, i, pp. 179, &c., fig. 39.

TENTHREDINIDÆ.

Cimbex (variabilis) salicisalbe, oviposition; BRISCHKE, *Schr. Ges. Danz.* (2) vii, Heft i, p. 11.

Lophyrus pini, habits; PISSOT, *Le Nat.* (2) ii, p. 283, woodcut: ravages of; GARDNER, *Ent. M. M.* xxv, p. 131.

L. (Monoctenus) juniperi, N. America, MARLATT, *Tr. Kansas Ac.* x, p. 82, pl., figs. 1-3, n. sp.

Schizocerus ebenus, Nort., habits; HOWARD, *Ins. Life*, i, pp. 43 & 44, fig. 7.

Hylotoma pagana, metamorphoses; MAGRETTI (550).

Nematus palliatus, Thoms., note on characters and larva; BRISCHKE, *Schr. Ges. Danz.* (2) vii, Heft i, p. 6. *N. ribesii*, metamorphoses; ANDRÉ (9). *N. mæstus*, Zad., note on; BRISCHKE, *Schr. Ges. Danz.* (2) vii, p. 107. *N. crassicornis*, Htg., redescribed; CAMERON, *Ent. M. M.* xxiv, p. 218. *N. ventralis*, Say, habits, metamorphoses, ravages; HOWARD, *Ins. Life*, i, pp. 33-37, fig. 5.

N. discoidalis, p. 1209, *frenalis*, p. 1210, *striipes*, *nitens*, p. 1212, Sweden, THOMSON, *Opusc. ent.* xii; *N. sardiniensis*, Sardinia, COSTA, *Atti Acc. Napoli* (2) ii, No. 8, p. 36; *N. sibiricus*, Irkutsk, JAKOWLEW, p. 368, *Hor. Ent. Ross.* xxii; *N. decoratus*, Florida, PROVANCHER, *Add. Hym. Queb.* p. 349 : n. spp.

Crasus varus, the defensive secretion of the larva; POULTON, *Tr. E. Soc.* 1888, p. 597. *C. latitarsus*, Nort., notes on, and description of the larvæ; JACK, *Psyche*, v, p. 41.

Eura nigra, N. America, PROVANCHER, p. 346, Add. Hym. Queb. n. sp.

Harpiphorus calderoni, Seville, MEDINA, Le Nat. (2) ii, p. 263, woodcut and Act. Soc. Esp. xvii, p. 117, n. sp.

Fenella agrimonis, Dantzig, BRISCHKE, Schr. Ges. Danz. (2) vii, Hab. p. 8, n. sp.

Phyllotoma aceris, habits, &c.; BOBBIES, Ent. Med. pp. 199-202.

P. fumipennis, England, CAMERON, Ent. M. M. xxiv, p. 218, n. sp.

Emphytus nigristigma, N. America, PROVANCHER, p. 348, Add. Hym. Queb.; *E. aztecus*, Mexico, CAMERON, p. 163, Mem. Soc. Manch. (4) i: n. spp.

Athalia spinarum, F., n. var. *rusicornis*; JAKOWLEW, p. 373, Hor. Ent. Ross. xxii.

Hoplocampa oertzeni, Island of Karpathos, KONOW, SB. Ak. Berlin, 1888, p. 190, n. sp.

Selantria stramineipes, habits and life-history; CARPENTIER, Bull. Soc. L. Nord Fr. viii, pp. 8-10.

S. (?) rothneyi, Bengal, CAMERON, p. 162, Mem. Soc. Manch. (4) i, n. sp.

Blennocampa tergestina, n. n. for *B. intermedia*, Kr., nec Cam.; KRIECHBAUMER, p. 211, Ent. Nachr. xiv. *B. alternipes*, fig. 4, *aterrima*, Kl., fig. 5, figured, pl. ii; P. S. Lond. E. Soc. 1887.

B. apicalis, Dantzig, BRISCHKE, Schr. Ges. Danz. (2) vii, p. 10, n. sp.

Pelmatopus minutus, Sweden, THOMSON, Opusc. ent. xii, p. 1213, n. sp. (?)

Eriocampa superba, Canada, PROVANCHER, Add. Hym. Queb. p. 351, n. sp.

Taxonus latus, Irkutsk, JAKOWLEW, p. 368, Hor. Ent. Ross. xxii; *T. floridanus*, N. America, PROVANCHER, p. 352, Add. Hym. Queb.: n. spp.

Macrophya 4-maculata, F., n. var. *nigra*; JAKOWLEW, p. 370, Hor. Ent. Ross. xxii.

M. castanea, Turkestan, JAKOWLEW, p. 373, Hor. Ent. Ross. xxii; *M. crassicornis*, N. America, PROVANCHER, p. 352, Add. Hym. Queb.: n. spp.

Tenthredo atra, L., n. var. *obscurata*, p. 370, *tachlaniana*, Cam., n. var. *rubripes*, *immaculata*, p. 371; JAKOWLEW, Hor. Ent. Ross. xxii.

T. bernhardi, Switzerland, KONOW, Deutsche e. Z. xxxii, p. 220; *T. pamirensis*, Pamir, p. 369, *oryssoides*, p. 371, *morawitzi*, p. 372, Piatigorsk, JAKOWLEW, Hor. Ent. Ross. xxii: n. spp.

Allantus: the generic characters, p. 209; the European species grouped and tabulated, pp. 211-219; *A. pallicornis*, F., note on, p. 213; *viduus* and *rossii*, variation, &c., p. 216; *brevicornis*, Kon., and *arcuatus*, Forst., noticed at length, pp. 217 & 218; *monozonus*, Kriechb., ♂ described, p. 219; KONOW, Deutsche e. Z. xxxii. *A. marginalis*, Pauz., ♂ figured, pl. ii, fig. 3; P. S. Lond. E. Soc. 1887.

A. irkutensis, p. 370, *morawitzi*, Piatigorsk, p. 372, *cephelotes*, Altai, *subcostatus*, Piatigorsk, p. 374, JAKOWLEW, Hor. Ent. Ross. xxii;

A. persa, Persia, p. 213, *steckii*, Switzerland, *parnasius*, p. 215, *græcus*, p. 216, Greece, *kussariensis*, Caucasus, p. 219, *clypealis*, Switzerland, p. 220, KONOW. Deutsche e. Z. xxxii : n. spp.

Perineura konowi, N. France, LETHIERRY, Bull. Soc. L. Nord France, viii, p. 218, n. sp.

Dolerus melanopterus, Greece, KONOW, SB. Ak. Berlin, 1888, p. 190, n. sp.

Sphacophilus, n. g., p. 427, for *S. crawii*, n. sp., California, p. 428 ; PROVANCHER, Add. Hym. Queb.

Tarpa ruthena, Krasnojarsk, JAKOWLEW, p. 376, Hor. Ent. Ross. xxii, n. sp.

(c.) *LEPIDOPTERA.*

Minute structure of scales ; SMITH (847), ROYSTON-PIGOTT (779).—Scent apparatus ; HAASE (354, 355).—Determination of sex in some larvæ ; POULTON (683).—Sexual differences in pupæ ; RÜHL (782).—Mode of representing growth of larvæ ; POULTON (683).—Deformities of wings ; FROMHOLZ (290).—Report on the Insect-house in the Zoological Gardens, for 1887 ; THOMSON, P. Z. S. 1888, pp. 119-121.—On the orthography of many generic names ; GLASER (316, 317).

RHOPALOCERA.

[*Cf.* ALPHERAKI (3), BARRETT (42), BARTLETT-CALVERT (43), BUTLER (114, 115, 116, 118, 119), CHRÉTIEN (149), CHRISTOPH (151), COCKERELL (156), DEMAISON (180), DOGNIN (194, 195), H. DRUCE (207), H. H. DRUCE (209, 210), EDWARDS (223, 224, 225), ELWES (227), EMERTON (229), ERSCHOFF (235), FRIEDLÄNDER (287), GODMAN & SALVIN (319, 320, 321), GRUM-GRSHIMAILO (348), GRAESER (327), GUMPTENBERG (351), HAASE (355), HONRATH (385, 386, 387, 388), MABILLE (537, 541, 542), MARTIN (557), MATHEW (563), MEYRICK (586), MOORE (611), MÖSCHLER (618), NICÉVILLE (623), OBERTHUR (629, 630), OLLIFF (632, 633, 635, 636), PAGENSTECHER (653), PIEPERS (672), POUJADE (680), RÖBER (771), SALVIN (787), SCHATZ & RÖBER (793), SCUDDER (820, 821, 822, 823), SEMPER (834), SMITH & KIRBY (854), STANDFUSS (864), STAUDINGER (865, 868), URECH (895), VENUS (898), WESTWOOD (927).]

The structure of butterflies: egg, pp. 2-7, pls. *lxiv-lxix* ; larva, pp. 8-26 ; pupa, pp. 27-36 ; imago, pp. 36-52 ; SCUDDER, *Butt. New England* (Introduction).—The modern classification of butterflies, pp. 52-75. Introduction ; *id. l. c.*

The 4 families defined : SCUDDER, *Butt. New England* i, pp. 105-108. 178 species in Amurland specially noticed ; GRAESER (327).

PAPILIONIDÆ.

Ornithoptera: scent-apparatus : HAASE, C.B. *Iris*, i, pp. 281-283 : habits of, pp. 159-168 ; *O. pronomus*, Gray, larva and pupa described, p. 168 ; *O. urviliana*, Guér., larva described, p. 169, figured, pl. vi, fig. 1 ; MATHEW, Tr. E. Soc. 1888. *O. lithonus*, ♀ figured, pl. iii, fig. 10 ; *O. arrucana*, Feld., aberr., ♀ *Goliath* and *kirschii*, described, p. 1 ; OBERTHUR, *Études d'Ent.* xii. *O. victoria*, Gray, sexes distinguished, p. 118. ♂ and half-grown larva figured, pl. iv : SALVIN, P. Z. S. 1888.

O. regina, Solomon Is., SALVIN, P. Z. S. 1888, p. 117 ; *O. plateni*.

Palawan, STAUDINGER, p. 274, CB. Iris, i; *O. staudingeri*, I. of Luang, iris, I. of Letti, RÖBER, p. 369, Ent. Nachr. xiv : n. app.

Pazala, n. g., for *Papilio*, sect. xx, Feld. (type, *P. glycerion*, Gray); MOORE, Desc. Ind. Lep. p. 283.

Dabusa, n. g., for *Papilio*, sect. xxix, subsect. A, Feld. (type, *P. gyas*, Westw.); MOORE, Desc. Ind. Lep. p. 283.

Tamera, n. g., for *Papilio*, sect. lx, subsect. c, Feld. (type, *P. castor*, Westw.); MOORE, Desc. Ind. Lep. p. 284.

Meandrusa, n. g., for *Papilio*, sect. xxix, subsect. B, Feld. (type, *P. exan*, Doub.); MOORE, Desc. Ind. Lep. p. 284.

Isamiopsis, n. g., for *Papilio*, sect. xxxvii part, Feld. (type, *P. telearchus*, Hew.); MOORE, Desc. Ind. Lep. p. 284.

Papilio : scent-apparatus in ; HAASE, CB. Iris, i, pp. 283-285. *P. lesches*, Godm. & Salv., = (*bicolor*, Kirby); SALVIN, Ent. M. M. xxiv, p. 275. *P. machaon*, L., var. *hospitonoides* larva, described and figured, p. 21, pl. v, fig. 19; OBERTHUR, Études d'Ent. xii : larva with deficient number of legs; CHRÉTIEN, Le Nat. (2) i, p. 185. *P. podalirius*, L., seasonal dimorphism in pupa; STANDFUSS, B. E. Z. xxxii, p. 233. *P. demoleus*, L., larva and chrysalis described and figured, pl. iv, fig. 5; its distribution and reputed ravages in Réunion discussed, pp. 9-12; *P. disparilis*, Bdv., larva and chrysalis described and figured, pp. 12-14, pl. iv, fig. 6; OBERTHUR, Études d'Ent. xii. *P. taboranus*, pl. i, fig. 1, *rex*, pl. i, fig. 2, *microdamas*, Burm., ♂, pl. i, fig. 3, figured, *birchalli*, Hew., described, p. 3, figured, pl. ii, fig. 6, and *P. corebus*, Feld., queried as probably its ♀, p. 4, *cacicus*, Luc., ♀ described, p. 4, *laius*, Rog, figured, pl. vii, fig. 47; *id. t. c. P. mehalis*, Sm., figured; SMITH, Rhop. ex. Papilionidæ, *Papilio*, ii, figs. 1 & 2, ♀ described, p. 3; *fulleri*, Sm., figured, l. c. figs. 3 & 4. *P. indicatus*, Butl., ♀, figs. 1 & 2, *bicolor*, Kirby, figs. 3 & 4, *Papilio*, iii; *solon*, Godm. & Salv., figs. 1 & 2, *mendana*, Godm. & Salv., figs. 3 & 4, *Papilio*, iv; *acheron*, Smith, figs. 1 & 2, *aita-nsoni*, Sm., figs. 3 & 4, *Papilio*, v; *procles*, Sm., figs. 1 & 2, *isander*, Godm. & Salv., figs. 3 & 4, figured and described, *Papilio*, vi; SMITH, Rhop. ex. *P. nitra* figured and described; EDWARDS, Butt. N. Am. iii, *Papilio*, i. *P. sarpedon* n. var. *semifuscatus*; HONRATH, p. 161, Ent. Nachr. xiv. *P. sarpedon*, L., var. *choredon*, Feld., p. 357, pl. xx, fig. 1, *macleanianus*, Leach, p. 358, pl. xx, figs. 2-2c, *erectheus*, Don., p. 359, life histories; OLLIFF, Ann. N. H. (6) i. *P. antiphus*, Fab., var. ?, *atropos*, p. 276, *alphenor*, Cr., var. *ledebouria*, Esch., and *elyros*, Wall., p. 277, *helenus*, L., n. var. *palawanicus*, *dedalus*, Feld., n. var. *angustatus*, *lowii*, Druce, sexes, p. 278, *antiphates*, Cr., n. var. *decolor*, p. 279, noticed and described; STAUDINGER, CB. Iris, i. *P. erectheus*, var. described and figured; OLLIFF, P. Linn. Soc. N.S.W. (2) iii, p. 1252. *P. erectheus*, *philenor*, structure of scales noticed; ROYSTON-PIGOTT, J. Quek. Club. (2) iii, pp. 205-207. *P. merope*, Cr., variation of; MÖSCHLER, Abh. Senck. Ges. xv, p. 52. *P. agamemnon*, L., *sarpedon*, L., *jason*, Esp., *antiphates*, Cr., *memnon*, L., *polytes*, L., life histories given at length, with figs.; PIEPERS, Tijdschr. Ent. xxxi, pp. 339-358, pls. vii & viii. *P. aidoneus*, Doubl., = (*erioleuca*, Oberth.), p. 423, *necilli*, Wood-Mason, = (*chemsion*, Oberth.), p. 424, *anticrates*, ♀ described, p. 434;

ELWES, Tr. E. Soc. 1888. *P. ægistus*, L., n. var. *ægistiades*; HONRATH, B. E. Z. xxxii, p. 250. *P. cæcicus*, Luc., ♀ ab., = (*zaddlachii*, Dew.); *id. t. c.* p. 253. *P. cæcicus*, Luc., and *saddochii*, Dew., note on; DEWITT, Deutsche e. Z. xxxii, p. 332. *P. lycophron*, Hubn., hermaphrodite, p. 500, fig. B; HONRATH, B. E. Z. xxxii. *P. gundlachianus*, description of larva two days previous to its transformation; BOUZON, p. 293, Tr. Am. Ent. Soc. xv. *P. erithonius*, Cr., pp. 169 & 170, *indicatus*, Butl., pp. 170-172, pl. vi, figs. 3, 3a, & 3b, *erectheus*, Don., pp. 172-176, *anactus*, MacL., p. 167, pl. vi, fig. 2, *lycaon*, Westw., pp. 177-179, metamorphoses and habits of; MATHEW, Tr. E. Soc. 1888.

P. humbloti, Grande-Comore, OBERTHUR, p. xl, Bull. Soc. Ent. Fr. (6) viii; *P. megara*, Palawán, STAUDINGER, p. 275, CB. Iris, i; *P. laugeni*, p. 234, *argynnus* (= *agamemnon*, local form *b*, Wallace), p. 235, Ké L, DRUCE, Ann. N. H. (6) ii; *P. judicæi*, North Peru, p. 3, pl. ii, fig. 4, *vercingetoris*, French Guiana, p. 5, pl. vii, fig. 51, OBERTHUR, Études d'Ent. xii; *P. schönbergianus*, Borneo, p. 250, pl. v, fig. 4, *lysimachus*, Peru, p. 251, pl. v, figs. 5 & 6, HONRATH, B. E. Z. xxxii; *P. ptolycus*, p. 99, *woodfordi*, *pisidice*, p. 100, *orsippus*, p. 101, *isander*, p. 211, *mendana*, p. 212, *solon*, *hecatæus*, p. 213, *laarchus*, p. 214, Solomon Islands, GODMAN & SALVIN, Ann. N. H. (6) i : n. spp.

Teinopalpus imperialis, habits; ELWES, Tr. E. Soc. 1888, p. 421.

Doritis mnemosyne, L., in the Harz; RÜDER, Ent. Nachr. xiv, p. 316.

Eurycyus cressida, F., noticed, p. 159, pupa figured, pl. vi, fig. 12; MATHEW, Tr. E. Soc. 1888.

Calinaga buddha, Moore, = (*brahma*, Butl.); ELWES, Tr. E. Soc. 1888, p. 351.

Parnassius, on hybridism in; HONRATH, B. E. Z. xxxii, pp. 501-503. *P. apollo*, L., var. noticed, p. 496, figured, pl. vii, fig. 4; *id. t. c.* *P. mnemosyne*, L., n. var. *hartmanni*; STANDFUSS, *t. c.* p. 234, pl. iii, figs. 1 & 2. *P. stoliczkanus*, Feld., n. var. *hunza*, p. 303, *delphius*, Ev., n. var. *illustris*, p. 304; GRUM-GRSHIMAÏLO, Hor. Ent. Ross. xxii.

P. princeps, *romanovi*, Central Asia, GRUM-GRSHIMAÏLO, p. 303, Hor. Ent. Ross. xxii, n. spp.

PIERIDÆ.

Archonias incerta, Ecuador, DOGNIN, Le Nat. (2) ii, p. 48, fig. 2, n. sp.

Hesperochavis poujadei, p. 188, fig. 1, *gaujoni*, p. 189, fig. 2, Ecuador. DOGNIN, Le Nat. (2) i; *H. aureomaculata*, Ecuador, *id. op. cit.* ii, p. 68, fig. 4 : n. spp.

Elodina angulipennis, Luc., habits; MATHEW, Tr. E. Soc. 1888, p. 154.

Terias purpurea, Moore, and other species, noticed; BUTLER, Ann. N. H. (6) i, p. 198. *T. hecabe*, L., its variation in Sikkim; ELWES, Tr. E. Soc. 1888, pp. 412 & 413. *T. bethesba* and *lata*, identity of; PRYER, Ent. M. M. xxiv, p. 185.

T. orientis, Centr. Africa, BUTLER, P. Z. S. 1888, p. 71; *T. talisse*, Talisse I., Celebes, WESTWOOD, Tr. E. Soc. 1888, p. 469, pl. xii, fig. 1 : n. spp.

Eurema, scent-apparatus in; HAASE, CB. Iris, i, p. 285.



E. marmorata, Ecuador, DOGNIN, Le Nat. (2) i, p. 189, n. sp.

Pieris: scent-apparatus of; HAASE, CB. Iris, i, p. 285. *P. latilimbata*, But., p. 155, pl. vi, fig. 4, *teutonia*, F., pp. 155–158, pl. vi, figs. 6 & 6a, life histories; MATHEW, Tr. E. Soc. 1888. *P. daphidice*, L., var. *albidice*, Ob., figured, pl. v, fig. 12; OBERTHUR, Études d'Ent. xii. *P. melete* and *ajaka*, note on; ELWES, Tr. E. Soc. 1888, p. 417. *P. imperator*, figs. 1 & 2, *smithii*, Kirby, figs. 3 & 4, *olympia*, Feld., figs. 5 & 6, *subflavescens*, Kby., fig. 8, figured; SMITH, Rhop. ex. Pieridæ, i. *P. xanthodice*, Luc., pl. i, fig. 1, *theodice*, Boisd., fig. 2, figured and redescribed; MABILLE, Miss. Sci. Cap Horn, pp. 6 & 7. *P. cheiranthi*, Hb., note on habits; LÜSCHER, Soc. Ent. ii, p. 156. *P. severina*, Cr., variation; MÖSCHLER, Abh. Senck. Ges. xv, p. 53. *P. rapæ*, new food-plant of; SCHWARZ, P. E. Soc. Wash. i, p. 49: colour of pupa and "surroundings"; P. E. Soc. 1888, pp. vi–x, and GRIFFITHS & WHITE (337): stinging of pupæ of; SOULE, Psyche v, p. 30. *P. rapæ* and *napi*, abundance in Japan in 1886; PRYER, Ent. M. M. xxi, p. 261. *P. brassica*, diminution of weight in the winter pupa; URECH (895). *P.*, spp., migration in the Alps: FICKE (271).

P. tadjika, Pamir, GRUM-GRSHIMAILO, p. 304, Hor. Ent. Ross. xxii; *P. potanini*, Mongolia, ALPHERAKI, S. E. Z. xlix, p. 66. *P. erutæ* (Boisd.), with var. *extensa*, Mou-Pin, POUJADE, p. xix, Bull. Soc. Ent. Fr. (6) viii; *P. ngasiya*, p. xli, *humbloti*, p. xlii, Grande-Comore, OBERTHUR, Bull. Soc. Ent. Fr. (6) viii: n. spp.

Aporia crategi, disappearance of near Berlin; GLEISSNER, Soc. Ent. iii, p. 89.

Glutophrissa contracta, Centr. Africa, BUTLER, P. Z. S. 1888, p. 75, n. sp.

Mylothris clarissa, Centr. Africa, BUTLER, P. Z. S. 1888, p. 70; *M. narcissus*, Kilima-njaro, *id. t. c.* p. 95: n. spp.

Herpania iterata, Kilima-njaro, BUTLER, P. Z. S. 1888, p. 96, n. sp.

Belenois auriginea and *lordaca* are not seasonal forms; BUTLER, Ann. N. H. (6) i, pp. 203 & 204.

B. instabilis, p. 76, *dentigera*, *infida*, p. 77, Centr. Africa, BUTLER, P. Z. S. 1888, n. spp.

Tachyris, scent-apparatus of; HAASE, CB. Iris, i, p. 285.

T. phæstus, Talisse I., Celebes, WESTWOOD, Tr. E. Soc. 1888, p. 469, pl. xii, fig. 2, n. sp.

Daptonura limbata, Kirby, figured; SMITH, Rhop. ex. Pieridæ, i, fig. 7.

Delias belladonna, Fab., habits and variation discussed; ELWES, Tr. E. Soc. 1888, pp. 408–410.

Prioneris thestylis, local variation of; ELWES, Tr. E. Soc. 1888, p. 410.

Eronia, scent-apparatus of; HAASE, CB. Iris, i, p. 286. *E. poppea*, Don., synonymical note; MÖSCHLER, Abh. Senck. Ges. xv, p. 54.

E. dilatata, Kilima-njaro, BUTLER, P. Z. S. 1888, p. 96, n. sp.

Catopsilia, scent-apparatus of; HAASE, C.B. Iris, i, p. 286. *C. catilla*, ♀ characters; WESTWOOD, Tr. E. Soc. 1888, p. 468.

Callidryas gorgophone, F., larva described, p. 158, figured, pl. vi, fig. 7; MATHEW, Tr. E. Soc. 1888.

Colias chrysotheme and varr., note on; ELWES, P. E. Soc. 1888, p. xxx. *C. chrysomelas* and varr., figured and described; EDWARDS, Butt. N. Am.

1888. [VOL. XXV.]

iii, *Colias* iv. *C. eriphyle*, Edw., and allied forms, notes on; LYMAN, *Canad. Ent.* xx, pp. 24-27. *C. casonia*, Stoll, preparatory stages described; EDWARDS, *t. c.* pp. 21-24. *C. eurytheme*, varieties and dimorphic forms of; COCKERELL, p. 201, *t. c.* *C. wiskotti*, Stgr., n. varr. *separata*, *chrysoptera*; GRUM-GRSHIMAILO, p. 305, *Hor. Ent. Ross.* xxii.

C. marco-polo, Pamir, GRUM-GRSHIMAILO, p. 304, *Hor. Ent. Ross.* xxii; *C. chlorocoma*, Kasikoparan, CHRISTOPH, p. 308, *t. c.* : n. spp.

Ixias andamana, Moore, figs. 1-3, *meipona*, Sm., figs. 4 & 5, *flavipennis*, Sm., figs. 6 & 7, figured and described; SMITH, *Rhop. ex. Pieris*, ii, *Ixias*, i. *I. pyrene*, L., variation noticed; ELWES, *Tr. E. Soc.* 1888, p. 420.

Teracolus, some species from Khandesh noticed; BUTLER, pp. 418 & 419, *Ann. N. H.* (6) i. *T. phoenius*, Butl., sexes described; *id.* p. 74, *P. Z. S.* 1888. *T. leo* and *incretus*, synonymy and sexes noticed; *id. t. c.* pp. 92 & 93.

T. palliseri, Khandesh, BUTLER, p. 418, *Ann. N. H.* (6) i; *T. puniceus*, p. 72, *bacchus*, p. 73, *Centr. Africa*, *id.* *P. Z. S.* 1888; *T. venustus*, *compus*, Kilima-njaro, *helvolus*, Somaliland, *id. t. c.* p. 94 : n. spp.

Anthocharis lanceolata, ♂ figured and described, *genutia*, figured and described, with metamorphoses; EDWARDS, *Butt. N. Am.* iii, *Anthocharis*, i. *A. pechi*, Stgr., figured, pl. v, fig. 11; OBERTHUR, *Études d'Ent.* xii. *A. cardamines*, egg and young larva; CHAPMAN, *Ent. M. M.* xxiv, pp. 257-259.

A. pima, Arizona, EDWARDS, p. 158, *Canad. Ent.* xx, n. sp.

Nathalis iole, Bolw., evanescent spot of; COCKERELL, p. 156, *Canad. Ent.* xx.

Euchloe lucilla, Butl., characters of; BUTLER, *Ann. N. H.* (6) i, p. 205.

DANAIDÆ.

Certain of Moore's genera discussed; HAASE, *CB. Iris*, i, pp. 286-301.

Euplaea, scent-apparatus of described; HAASE, pp. 292-301. *E. midamus*, L., = (*linnei*, Moore), p. 301, *hopei*, Feld., = (*binotata*, Butl.), p. 302; ELWES, *Tr. E. Soc.* 1888.

E. hansemanni, N. Guinea, HONRATH, *B. E. Z.* xxxii, p. 248, pl. v, fig. 1; *E. woodfordi*, p. 90, *pyrgion*, *pronax*, p. 91, *prusias*, *polymela*, *asyllus*, p. 92, *gerion*, *heurippus*, p. 93, *pyres*, p. 94, Solomon Is., GODMAN & SALVIN, *Ann. N. H.* (6) i : n. spp.

Amauris hanningtoni, Kilima-njaro, BUTLER, *P. Z. S.* 1888, p. 91, n. sp.

Ideopsis, scent-apparatus of; HAASE, *CB. Iris*, i, p. 287.

Danais, scent-apparatus of; HAASE, *CB. Iris*, i, pp. 287-292. *D. petilia* and allied species, note on; MASTERS, *P. Linn. Soc. N.S.W.* (2) ii, p. 1076. *D. archippus*, note on habits and migration; MOFFATT, pp. 136-138, *Canad. Ent.* xx : notes on; MORTON, *t. c.* pp. 226-228, EDWARDS, *t. c.* pp. 84-86, and MARSH, *t. c.* p. 45 : habits; COCKERELL, *t. c.* p. 200. Milkweed Butterfly, changes of organs during pupation; EMERTON (229). *Anosia plerippus*, natural history of in New England; SCUDDER, *Psyche*, v, pp. 62-66.

Danais cometho, p. 90, *garamantis*, p. 210, Solomon Is., GODMAN & SALVIN, *Ann. N. H.* (6) i, n. spp.

Hamadryas erages, *hiero*, Solomon Is., GODMAN & SALVIN, p. 95, *Ann. N. H.* (6) i, n. spp.

ACRÆIDÆ.

Acraea andromacha, Fab., larva and pupa noticed; OLLIFF, p. 359, Ann. N. H. (6) i: life history; MATHEW, Tr. E. Soc. 1888, p. 143, pl. vi, figs. 14 & 14a, larva and pupa. *A. gea* and *epœa* maintained as distinct; MÖSCHLER, Abh. Senck. Ges. xv, p. 55. *A. atrata* and *steinii*, referred to *Phyciodes*; DEWITZ, Deutsche e. Z. xxxii, p. 332. *A. (Planema) johnstoni*, Godm., ♀ noticed; BUTLER, P. Z. S. 1888, p. 91.

A. balbina, Zanzibar mainland, p. 6, pl. iii, fig. 8, OBERTHUR, Études d'Ent. xii; *A. areca*, p. clxix, *vuilloti*, p. clxx, E. Africa, MABILLE, Bull. Soc. Ent. Fr. (6) viii; *A. pollonia*, Solomon Is., GODMAN & SALVIN, Ann. N. H. (6) i, p. 210; *A. theophila*, p. 173, fig. 3, *euclia*, p. 174, fig. 4, Ecuador, DOGNIN, Le Nat. (2) i: n. spp.

Planema montana, Kilima-njaro, BUTLER, P. Z. S. 1888, p. 91, n. sp.

Alena hauttecauri, pl. iii, figs. 7 & 9, *major*, pl. ii, fig. 5, E. Africa, p. 7, OBERTHUR, Études d'Ent. xii, n. spp.

HELICONIIDÆ.

Heliconius phyllis, odour from appendages of; MANN, P. E. Soc. Wash. i, p. 41.

NYMPHALIDÆ.

SCHATZ (793) continues his definitions and tables of the genera, pp. 137-180, with pls. xxvii-xxxiv, giving details of neurulation and other generic characters.

The family defined and discussed, pp. 109-115, with tables of the subfamilies, based on egg, young caterpillar, mature caterpillar, chrysalis and imago, pp. 114 & 115; the subfamily *Nymphalinae* defined and discussed, pp. 222-228, with tabulation of the tribes in their various stages; the tribes defined, *Nymphalidi*, pp. 249 & 250; *Apaturidi*, p. 228: SCUDDER, Butt. New England, i.

Cethosia mindanensis, pl. xviii, figs. 4 & 5, *luzonica*, figs. 6-8, *eurymena*, figs. 1-3, larva and pupa, pl. A, fig. 4, figured; SEMPER, Reisen Philipp. ii, v.

C. luzonica, varr. *pariana*, *boholica*, pl. xviii, fig. 9, p. 101, *magindanaica*, p. 102, Philippines, SEMPER, Reisen Philipp. ii, v, n. spp. (sic).

Agraulis vanilla, colour-variation in larvæ; RILEY, P. E. Soc. Wash. i, p. 85.

Terinos, scent-apparatus of; HAASE, p. 301, CB. Iris, i. *T. lucilla*, Butl., figured, pl. xix, figs. 5 & 6; SEMPER, Reisen Philipp. ii, v.

Cirrochroa, scent-apparatus in; HAASE, p. 302, CB. Iris, i. *C. mithila*, Moore, = (*rotundata*, Butl., and *anjira*, Moore); ELWES, Tr. E. Soc. 1888, p. 347. *C. tyche*, Feld., figured, pl. xx, figs. 3-5; SEMPER, Reisen Philipp. ii, v.

C. menones, Philippines, p. 108, pl. xx, figs. 1 & 2, SEMPER, Reisen Philipp. ii, v, n. sp.

Cupha arias, figured, pl. xx, figs. 6 & 7; SEMPER, Reisen Philipp. ii, v.

Cynthia arsinoe, Cr., scent-apparatus; HAASE, CB. Iris, i, p. 302. *C. erota*, F., larva described; MANDERS, Ent. M. M. xxv, p. 37. *C. deione*, Er., figured, pl. xix, figs. 7 & 8, larva and pupa, pl. A, fig. 5; SEMPER, Reisen Philipp. ii, v.

C. sapor, p. 95, *catenes*, *clodia*, p. 96, Solomon Is., GODMAN & SALVIN, Ann. N. H. (6) i, n. spp.

Messaras lampetia, L., peculiar scales in ♂; HAASE, p. 303, CB. Iris, i. *M. ophthalmicus*, Talisse I., Celebes, WESTWOOD, Tr. E. Soc. 1888, p. 473, pl. xii, fig. 3; *M. woodfordi*, *pallescens*, Solomon Is., GODMAN & SALVIN, p. 97, Ann. N. H. (6) i : n. spp.

Atella, scent-apparatus in; HAASE, CB. Iris, i, p. 303. *A. phalanta*, Fab., larva and chrysalis described and figured, pp. 15 & 16, pl. iv, fig. 3; OBERTHUR, Études d'Ent. xii. *A. phalanta*, Dr., larva and pupa figured, pl. A, fig. 6, *alcippe*, Cr., figured, pl. xx, figs. 8 & 9; SEMPER, Reisen Philipp. ii, v.

A. ephyra, Solomon Is., GODMAN & SALVIN, p. 97, Ann. N. H. (6) i, n. sp.

Argynnis, scent-apparatus in; HAASE, CB. Iris, i, p. 303. *A. palea*, variation discussed; ELWES, Tr. E. Soc. 1888, p. 350. *A. nausicaa*, figured and described; EDWARDS, Butt. N. Am. iii, *Argynnis*, x. *A. aglaia*, n. ab. *veimani*, p. 103, figs. 1 & 2, *adippe*, n. ab. *xareni*, p. 104, fig. 3; HOLMGREN, Ent. Tidskr. ix. *A. aglaia*, L., pl. vii, fig. 2, *hecate*, W., var. of; HONRATH, p. 495, B. E. Z. xxxii. *A. paphia*, hermaphrodites; SPEYER, S. E. Z. xlix, pp. 200 & 201. *A. paphia*, aberration of; FRIEDLANDER, B. E. Z. xxxii, pp. 491-494, pl. vii, fig. 1. *A. oscarus*, Ev., n. var. *australis*; GRAESER, t. c. p. 90. *A. hesperis*, metamorphoses; EDWARDS, p. 67, Canad. Ent. xx. *A. atlantis*, Edw., pp. 1-3, *edwardsii*, Reak., pp. 3-5, preparatory stages described; *id.* t. c.

A. iphigenia, Amurland, GRAESER, p. 90, B. E. Z. xxxii, n. sp.

Melitæa cinzia, L., var. figured; P. S. Lond. E. Soc. 1887, pl. i, figs. 1 & 2, noticed, p. 65. *M. athalia*, n. var. *helvetica*; RÜHL, Soc. Ent. iii, p. 137. *M. didyma*, L., aberration; ZIEGLER, B. E. Z. xxxii, S.B. p. (12). *M. ichnæa*, Boisd., figured, pl. xi, fig. 1, noticed, p. 199; ERSCHOFF, Hor. Ent. Ross. xxii. *M. sindura* var. *orientalis*, figured, pl. x, figs. 4 & 5, variation noticed, p. 337; ELWES, Tr. E. Soc. *M. rubicunda* and var. figured and described; EDWARDS, Butt. N. Am. iii, *Melitæa*, ii. *M. phaeton*, habits of larva; HINKLEY, Psyche, v, p. 54.

M. brucei, p. 81, *taylori*, p. 82, Brit. N. America, EDWARDS, Canad. Ent. xx, n. spp.

Phyciodes rosina, p. 48, fig. 1, *miriam*, p. 67, fig. 1. Ecuador, DOGNIN, Le Nat. (2) ii; *P. flavocincta*, p. 174, fig. 6, *gaujoni*, p. 175, fig. 7, Ecuador, *id.* op. cit. i : n. spp.

Symbrenthia lucina, figured, figs. 7 & 8, pl. xxi; SEMPER, Reisen Philipp. ii, v.

S. anna, Philippines, p. 114, pl. xxi, figs. 5 & 6, SEMPER, Reisen Philipp. ii, v, n. spp.

Vanessa radama, Bdv., p. 16, pl. iv, fig. 1, *borbonica*, Obthr., pp. 17-19, fig. 4, larvæ and pupæ described and figured; OBERTHUR, Études d'Ent. xii. *V. agnicula*, Moore, note on the characters of, and allied species; BUTLER,

Ann. N. H. (6) i, pp. 139-141. *V. polychloros*, L., malformation in ; FROMHOLZ, B. E. Z. xxxii, p. 230, pl. ii, fig. 8. *V. cardui*, L., var. *elymi*, Ramb., noticed and figured, pl. vii, fig. 3, p. 495 ; HONRATH, B. E. Z. xxxii. *V. thomsonii*, Butl., figured, pl. 178, fig. 1 ; WATERHOUSE, Aid. *V. l-album*, E., systematic position discussed ; SPEYER, S. E. Z. xlix, p. 213. *V. urticae*, larva of, with deficient number of legs ; CHRÉTIEN, Le Nat. (2) i, p. 185 : aberration obtained by rearing larvæ in heat of sun ; VENUS, CB. Iris, i, pp. 209 & 210, pl. xii, figs. 14 & 15. *V. rizana* queried as var. of *urticae* ; *V. c-album*, n. var., *tibetana*, pl. x, fig. 1 ; ELWES, Tr. E. Soc. 1888, p. 363. *V. antiopa*, aberration ; WERNER, Ent. xxi, p. 89, and POWLEY, t. c. p. 109.

V. benguetana, Philippines, p. 122, pl. xxi, figs. 11 & 12, SEMPER, Reisen Philipp. ii, v, n. sp.

Junonia asterie and *aimana*, L., are seasonal forms ; ELWES, Tr. E. Soc. 1888, p. 341. *J. vellida*, F., life history ; MATHEW, Tr. E. Soc. 1888, pp. 146 & 147, pl. vi, fig. 11, larva. *J. boopis*, Trim., note on its characters ; BUTLER, P. Z. S. 1888, p. 62.

J. infracta, Centr. Africa, BUTLER, P. Z. S. 1888, p. 63, n. sp.

Pyrameis cardui var. *kershawi*, occurrence in Europe and Australia ; OLLIFF (636). *P. itea*, F., life history ; MATHEW, Tr. E. Soc. 1888, p. 145, pl. vi, fig. 10, larva.

Rhinopalpa stratonice, Feld., figured, pls. xx, fig. 10, & xxi, figs. 9 & 10 ; SEMPER, Reisen Philipp. ii, v.

Salamis sabina, larva and pupa figured, pl. A, fig. 7 ; SEMPER, Reisen Philipp. ii, v.

Kallima inachus, habits, = (*boisduvali*, *atkinsoni*, *ramsayi*, Moore) ; ELWES, Tr. E. Soc. 1888, p. 366.

Doleschallia herrichii, Butl., life history ; MATHEW, Tr. E. Soc. 1888, pl. vi, figs. 13 & 13a, larva and pupa. *D. polibete*, Cr., figured, pl. xxii, larva, pupa, pl. A, fig. 8 ; SEMPER, Reisen Philipp. ii, v.

D. sciron, Solomon Is., GODMAN & SALVIN, Ann. N. H. (6) i, p. 98, n. sp.

Ergolis, scent-apparatus in ; HAASE, CB. Iris, i, p. 304.

Perisama eliodora, Ecuador, DOGNIN, Le Nat. (2) i, p. 174, fig. 5 ; *P. daridi*, Ecuador, *id. op. cit.* (2) ii, p. 67, fig. 3 (but, p. 94, t. c., it is sunk as *P. hazarma*, Hew.) : n. spp.

Cyrestis cassander, figs. 1 & 2, *mænalis*, figs. 3 & 4, figured, pl. xx ; SEMPER, Reisen Philipp. ii, v.

Adolias corezia, Hb., mimicry in chrysalis ; WEYERS, C.R. ent. Belg. xxxii, p. xxvi.

Hypolimnas bolina, L., life history ; MATHEW, Tr. E. Soc. 1888, pp. 149-151 : p. 188, t. c., the name *nerina*, Fab., proposed for use for the Australasian Insect. *H. anomala*, figured, pl. xxiii, figs. 1-6, *bolina*, figs. 7 & 8, & pl. xxiv, larva and pupa, pl. A, fig. 9 ; SEMPER, Reisen Philipp. ii, v.

H. listeri, Christmas I., BUTLER, P. Z. S. 1888, p. 542, n. sp.

Diadema scopas, Solomon Is., GODMAN & SALVIN, p. 98, Ann. N. H. (6) i, n. sp.

Parthenos salentia, Hopff., figured, pl. xix, figs. 1-4, variation described, pp. 98 & 89 ; SEMPER, Reisen Philipp. ii, v.

P. aspila, N. Guinea, HONRATH, B. E. Z. xxxii, p. 248, pl. v, fig. 2, n. sp.
Limnitis dumetorum, Bdv., larva and chrysalis described and figured, p. 14, pl. iv, fig. 2; OBERTHUR, Études d'Ent. xii. *L. dissippus*, oviposition; SOULE, Psyche, v, p. 13, SCUDDER, t. c. p. 30, SOULE, t. c. p. 43.

Basilarchia, habits of; SCUDDER, Psyche, v, pp. 79-85: the various stages defined, pp. 250-259; protective devices in, pp. 260-266; tables of the eastern N. American species, p. 266; *B. archippus*, imago defined and figured, pp. 267-269, pls. i, fig. 5, & ii, fig. 4, egg, p. 269, pl. lxiv, fig. 13, larva, p. 270, pl. lxx, fig. 7, pl. lxxviii, fig. 34, & pl. lxxiv, figs. 19, 22, & 24, pupa, p. 271, pl. lxxxiii, figs. 18-20; *B. astyanax*, imago, pp. 280-283, pl. ii, fig. 8, egg, p. 283, pl. lxiv, fig. 12, larva, p. 283, pl. lxxiv, figs. 17, 21, & 25, pupa, p. 284, pl. lxxxiii, figs. 12 & 13; *B. proserpina*, imago, pp. 289-290; *B. arthemis*, imago, pp. 294-297, pl. ii, fig. 5, egg, p. 297, pl. lxiv, fig. 15, larva, p. 297, pl. lxxiv, fig. 26, pupa, p. 298, pl. lxxxiii, figs. 14 & 23; SCUDDER, Butt. New England, i.

Neptis, scent-apparatus in; HAASE, CB. Iris, i, p. 304. *N. marpesia*, Hopf., note on; BUTLER, P. Z. S. 1888, p. 65. *N. goochi*, Trim., var. described; *id.* t. c. p. 92. *N. amba*, var. = (*carticoides*, Moore), p. 344. *N. varmona* = (*komarupa* and *adara*), *N. astola* = (*emodes*, Moore), p. 345; ELWES, Tr. E. Soc. 1888.

N. pisias, Solomon Is., GODMAN & SALVIN, Ann. N. H. (6) i, n. sp.

Athyma, scent-apparatus in; HAASE, CB. Iris, i, p. 305.

A. orientalis, Sikkim, ELWES, Tr. E. Soc. 1888, p. 354, n. sp.

Abrota ganga, Moore, = (*jumna*, Moore, and *mirus*, Butl.); ELWES, Tr. E. Soc. 1888, p. 356.

Euryphene violacea, Kilima-njaro, BUTLER, P. Z. S. 1888, p. 91, n. sp.

Euphaedra vesparia, p. 59 (altered, p. 97, to *vespasia*), *artayuta*, p. 60, W. Africa, MÜSCHLER, Abh. Senck. Ges. xv, provisional names for doubtful n. spp.

Harma and *Cymothoe*, synonymical note; MÜSCHLER, Abh. Senck. Ges. xv, p. 61, note.

Cynandra, n. g., for *Aterica afer*, Dru.; SCHATZ, Exot. Schmett. ii, p. 161, pl. xxv.

Euthalia duda, Stgr., characters of, p. 358: *E. phenicus* and *jama*, relations of, discussed, p. 359; ELWES, Tr. E. Soc. 1888. *E. lusiada*, Feld., pl. xvi, figs. 5 & 6, figured; SEMPER, Reisen Philipp. ii, v.

E. phelada, Philippines, pl. xvi, fig. 7, p. 88, SEMPER, Reisen Philipp. ii, v, n. sp.

Felderia, n. g., p. 88, for *Adolias*, sect. iv, Feld., including *F. phlegythum*, n. sp., Philippines, p. 90, pl. xvii, figs. 6-9; SEMPER, Reisen Philipp. ii, v.

Tanaëcia calliphorus, Feld., fig. 9, *leucotenia*, Semp., figs. 10 & 11, figured, pl. xvi; SEMPER, Reisen Philipp. ii, v.

Symphædra, scent-apparatus in; HAASE, CB. Iris, i, p. 305. *S. damalis*, Er., pl. xvi, figs. 1 & 2, *panopus*, Feld., pl. xvii, fig. 1, *sotrapes*, Feld., figs. 2 & 3, figured; SEMPER, Reisen Philipp. ii, v.

S. piratica, p. 93, pl. xvi, figs. 3 & 4, *trapeza*, p. 96, pl. xvii, figs. 4 & 5, Philippine Is., SEMPER, Reisen Philipp. ii, v, n. spp.

Apatura namouna, = (*bharana*, Moore); ELWES, Tr. E. Soc. 1888,

p. 339. *A. iris*, protective resemblance of its pupa ; POULTON (683). *A. cellis*, swarming of ; Ins. Life, i, p. 28.

Chlorippe, in the different stages, defined, pp. 231-235 ; *O. clyton*, imago described and figured, pp. 241-244, pl. xvi, figs. 7 & 9, egg, p. 244, pl. lxiv, figs. 6 & 7, larva, p. 244, pl. lxxiv, fig. 20, pupa, p. 244, pl. lxxxiii, figs. 15-17 ; SCUDDER, Butt. New England, i.

Charaxes kirkii, ♂ described ; BUTLER, P. Z. S. 1888, p. 60. *O. epigenes*, G. & S., figs. 1-4, sexes figured and described ; SMITH, Rhop. ex., Nymphalidæ, Charaxes, iii. *C. athamas*, Dr., variation discussed ; ELWES, Tr. E. Soc. 1888, p. 367. *C. affinis*, Butl., hermaphrodite ; HONRATH, p. 499, fig. A, B. E. Z. xxxii. *C. pyrrhus*, L., n. var. *kronos* ; id. t. c. p. 250.

C. epigenes, Solomon Is., GODMAN & SALVIN, Ann. N. H. (6) i, p. 210, n. sp.

Mynes hercyna, G. & S., figs. 1-3, *eucosmetos*, G. & S., figs. 4-6, figured and described ; SMITH, Rhop. ex., Nymphalidæ, Mynes, i.

M. woodfordi, p. 99, *hercyna*, p. 211, Solomon Is., GODMAN & SALVIN, Ann. N. H. (6) i, n. spp.

Prothoe schönbergi, N. Guinea, HONRATH, B. E. Z. xxxii, p. 249, pl. v, fig. 3, n. sp.

Paphia troglodyta, Fab., preparatory stages ; EDWARDS, Canad. Ent. xx, p. 41.

Polygrapha, n. g., next *Ctenophlebia*, for *Anaca cyanea*, Godm. & Salv. ; SCHATZ, Exot. Schmett. ii, p. 175.

MORPHIDÆ.

Anathusia, scent-apparatus in, the subgen. *Amathuzidia* and *Zeux-anathusia*, Stgr., being the same ; HAASE, pp. 307-309, CB. Iris, i.

Zeuxidia, scent-apparatus in ; HAASE, CB. Iris, i, p. 309. *Z. horsfieldii*, Feld., and *doubledayi*, Westw., characters of the females ; HONRATH, B. E. Z. xxxii, p. 253.

Discophora cheops, Feld., scent-apparatus in ; HAASE, CB. Iris, i, p. 310.

D. spiloptera, Sikkim, NICÉVILLE, Tr. E. Soc. 1888, p. 331, n. sp.

Clerome, scent-apparatus in ; HAASE, CB. Iris, i, p. 310.

Hyantis, scent-apparatus in ; HAASE, CB. Iris, i, p. 311.

Stichophthalma, scent-apparatus in ; HAASE, CB. Iris, i, p. 306.

Thaumanthis, scent-apparatus in ; HAASE, CB. Iris, i, p. 306. *T. diores*, Doubl., = (*ramdeo*, Moore) ; ELWES, Tr. E. Soc. 1888, p. 333.

Morpho menelaus, structure of scale of ; SMITH, J. Quek. Club (2) iii, p. 272.

SATYRIDÆ.

The subfamily discussed, with tables for the New England genera ; SCUDDER, Butt. New England, pp. 115-123.

Zophoessa dura, pl. ix, fig. 1, *ramadeva*, fig. 2, *jalahurida*, fig. 4, *möllerii*, fig. 3, figured ; ELWES, Tr. E. Soc. 1888.

Z. ramadeva, Sikkim, NICÉVILLE, P. A. S. B. 1887, p. 147, n. sp.

Debis portlandia, figured and described with metamorphoses; EDWARDS, Butt. N. Am. iii, *Debis*, i.

Lethe, scent-apparatus in; HAASE, CB. Iris, i, p. 311. The species of Eastern Himalaya tabulated, pp. 308-310: *L. scanda*, Moore, = (*Zophessa dirphia*, Druce); *L. bhairava*, Moore, = (*Debis anysis*, Hew.), p. 311; *L. vindhya*, Feld., = (*alberta*, Butl., *purana*, Feld., and *dolopea*, Hew.), p. 313; *L. sidera*, pl. ix, fig. 3, *tristigmata*, pl. viii, fig. 1, figured; *L. visrava*, ♀, = (*deliades*, Hew.), p. 317: ELWES, Tr. E. Soc. 1888.

Melanitis leda, L., life history; MATHEW, Tr. E. Soc. 1888, pp. 137-141: variation; MÖSCHLER, Abh. Senck. Ges. xv, p. 62. *M. zitenias*, *duryodana*, and *aswa*, queried as forms of *M. leda*; ELWES, Tr. E. Soc. 1888, p. 329. *M. euradeva*, scent-apparatus in; HAASE, CB. Iris, i, p. 312.

Neosatyrys halmi, figured and described; MABILLE, Miss. Sci. Cap Horn, vi, p. 3, pl. i, fig. 3.

Neonympha, Hüb., defined, pp. 199 & 200; *N. phocion*, imago defined and figured, p. 204, pl. xiv, fig. 7, egg, p. 205, pl. lxiv, fig. 9, larva, p. 205, pl. lxx, fig. 11, pl. lxxiv, figs. 8 & 12; SCUDDER, Butt. New England, i. *N. areolata*, figured and described, with var. and metamorphoses; EDWARDS, Butt. N. Am. iii, *Neonympha*, ii.

Cissia, defined, pp. 208-210; *C. eurytus*, imago, p. 214, pl. i, fig. 8, pl. ii, fig. 6, egg, p. 216, pl. lxiv, figs. 5 & 11, larva, p. 216, pl. lxx, fig. 4, pl. lxxiv, figs. 3, 6, & 10, pupa, p. 217, pl. lxxxiii, fig. 28; SCUDDER, Butt. New England, i.

Enodia, Hüb., defined, pp. 175 & 177; *E. portlandia*, imago, p. 181, pl. i, fig. 3, egg, p. 184, pl. lxiv, fig. 4, larva, p. 184, pls. lxx, fig. 9, & lxxiv, fig. 16, pupa, p. 184, pl. lxxxiii, fig. 6; SCUDDER, Butt. New England, i.

Satyrodes, defined, pp. 187-189; *S. eurydice*, imago, pp. 193-195, pl. i, fig. 10, pl. ii, fig. 5, egg, p. 195, pl. lxiv, fig. 10, larva, p. 196, pls. lxx, fig. 1, & lxxiv, fig. 9, pupa, p. 196, pl. lxxxiii, fig. 9; SCUDDER, Butt. New England, i.

Erebia: GUMPPENBERG gives table of the characters of the species, a catalogue of species and varieties, and observations and notes thereon; S. E. Z. xlix, pp. 365-393. *E. arete*, F., habits and larva; HÖFNER, Soc. Ent. iii, p. 10. *E. haydeni*, referred to *Ctenonympha*; ELWES, P. E. Soc. 1888, p. xxxi. *E. parmenio*, ab. *inocellata*; GRAESER, B. E. Z. xxxii, p. 96. *E. tyndarus* var. *dromus*, distribution in Switzerland; CHRIST, MT. schw. ent. Ges. viii, p. 47. *E. magdalena*, figured and described, with metamorphoses, *haydeni*, figured and described; EDWARDS, Butt. N. Am. iii, *Erebia*, i.

E. mongolica, Seniretschia, ERSCHOFF, p. 199, pl. xi, fig. 3, Hor. Ent. Ross. xxii, n. sp.

Eneis, Hüb.: the genus discussed, and defined in various stages; SCUDDER, Butt. New England, i, pp. 123-127. *E. semideca*, imago described, p. 135, figured, pl. i, fig. 9, & pl. ii, fig. 3, egg, p. 137, pl. lxiv, fig. 8, larva, p. 137, pl. lxx, fig. 5, & pl. lxxiv, figs. 2, 4, 8, & 15, chrysalis, p. 138, pl. lxxxiii, figs. 4 & 5; *id. t. c.* *Chionobas jutta*, metamorphoses; FYLES, p. 131, Canad. Ent. xx. *E. jutta*, imago described, p. 149, figured, pl. xiv, fig. 17, egg, p. 151, pl. lxiv, fig. 2, larva, p. 151.

pl. lxx, fig. 2, pl. lxxiv, fig. 11, & pl. lxxxvii, figs. 17 & 18; SCUDDER, Canad. Ent. xx.

Æ. hora, Central Asia, GRUM-GRESHIMAÏLO, p. 307, Hor. Ent. Ross. xxii, n. sp.

Melanargia halimede, n. var. *lugens*; HONRATH, p. 161, Ent. Nachr. xiv.

Satyrus loha, Doh., figured, pl. ix, fig. 6, = (*padma*, Elwes), p. 323; ELWES, Tr. E. Soc. 1888. *S. staudingeri*, n. var., *gultshensis*, GRUM-GRESHIMAÏLO, p. 307, Hor. Ent. Ross. xxii; *S. dryas*, Sc., n. var. *paupera*; ALPHERAKI, S. E. Z. xlix, p. 67.

S. boloricus, Central Asia, GRUM-GRESHIMAÏLO, p. 307, Hor. Ent. Ross. xxii, n. sp.

Epinephele abeona, Don., life history; MATHEW, Tr. E. Soc. 1888, pp. 141-143, pl. vi, fig. 8. larva. *E. hyperanthes*, var. noticed; WINKWORTH, Ent. xxi, p. 273. *E. eudora* var. *lupinus*, Oosta, note on; DEPRETO, Soc. Ent. ii, p. 172.

E. helena, Australia, OLLIFF, P. Linn. Soc. N.S.W. (2) iii, p. 395, n. sp.

Xenica ella, N. S. Wales, OLLIFF, P. Linn. Soc. N.S.W. (2), ii, p. 976, n. sp.

Geitoneura and *Argynnina*, Butl., to be merged in *Xenica*; OLLIFF, P. Linn. Soc. N.S.W. (2) ii, p. 976, note.

Heteronympha merope, scent-apparatus in; HAASE, CB. Iris, i, p. 312.

Cercyonis: definition of the genus in the various stages, pp. 156-159. *C. alope*, description and figs., imago, pp. 164-166, pl. i, figs. 2 & 6, & pl. xi, fig. 8, egg, p. 166, pl. lxvii, fig. 1, larva, p. 166, pl. lxx, fig. 6, & pl. lxxiv, fig. 18; *C. nephele*, description and figures, imago, pp. 171-173, pl. i, figs. 1 & 4, & pl. xi, fig. 1, egg, p. 173, pl. lxiv, fig. 3, larva, p. 173, pupa, pl. lxxxiii, figs. 7 & 8; SCUDDER, Butt. New England, i.

Mycalesis, scent-apparatus in; HAASE, CB. Iris, i, p. 313. *M. sanatana*, Moore, and *gopa*, Feld., united as seasonal forms, also *M. malsara* and *rualis*; ELWES, Tr. E. Soc. 1888, pp. 305 & 306. *M. nicotia*, figured, pl. ix, fig. 5, and discussed, p. 306; *id. t. c.*

Ypthima, scent-apparatus in; HAASE, CB. Iris, i, p. 314. *Y. sakra*, Moore, = (*nikæa*, *id.*); *Y. methora*, Hew., true characters of; ELWES, Tr. E. Soc. 1888, p. 326. *Y. avanta* and *ordinata*, characters of; BUTLER, Ann. N. H. (6) i, p. 136. *Y. mahratta*, fig. 1, *apicalis*, fig. 2, *horsfieldii*, fig. 3, *howra*, fig. 4, *kasmira*, fig. 5, *avanta*, fig. 6, *newara*, fig. 7, *nikæa*, fig. 8, figured, pl. 179; WATERHOUSE, Aid.

Y. pupillaris, *albida*, Centr. Africa, BUTLER, P. Z. S. 1888, p. 59; *Y. kalelonda*, Celebes, WESTWOOD, Tr. E. Soc. 1888, p. 475, pl. xii, fig. 4: n. spp.

Cœnonympha infusata, MacL., referred to *Mycalesis*; OLLIFF, P. Linn. Soc. N.S.W. (2) iii, p. 395. *C. galactinus*, with form *californicus*, and var. *eryngii*, with metamorphoses described and figured; EDWARDS, Butt. N. Am. iii, Cœnonympha, i. *C. pamphilus*, var.; LARKEN, Ent. xxi, p. 111, and WEIR, t. c. p. 139.

C. paronina, *sinica*, China, ALPHERAKI, S. E. Z. xlix, p. 66, n. spp.

Lymanopoda villarresi, Ecuador, DOGNIN, Le Nat. (2) i, p. 173, fig. 1, n. sp.

Pedaliodes morenoi, Ecuador, DOGNIN, *Le Nat.* (2) i, p. 173, fig. 2, n. sp.

Drucina leonata, Butl., figured, pl. 84; STAUDINGER, *Exot. Schm.*
Pronophila thelebe, Doub., *venerata*, Butl., *timanthes*, Salv., figured, pl. lxxxv; STAUDINGER, *Exot. Schm.*

Taygetis mermeria var. *tenebrosus*, *virgilia* var. *rufo-marginata*, Stgr., *andromeda* var. *marginata*, Stgr., *echo* var. *velutina*, Stgr., *albinotata*, Butl., *penela*, Cr., figured, pl. lxxxv; STAUDINGER, *Exot. Schm.*

T. salvini, Chiriqui, STAUDINGER, *Exot. Schm.*, p. 236, pl. lxxxv, n. sp.

Corades enyo, *callipolis*, Hew., figured, pl. lxxxvi; STAUDINGER, *Exot. Schm.*

C. albomaculata, Chanchamayo (? *pannonia*, Hew., var.), STAUDINGER, *Exot. Schm.*, p. 236, pl. lxxxvi, n. sp.

Bia actorion, L., figured, pl. lxxxvi; STAUDINGER, *Exot. Schm.*

ELYMNIIDÆ.

Elymnias, scent-apparatus in; HAASE, CB. *Iris*, i, p. 315. *E. phagesa*, Fab., var. *undularis*, Dm., *beza*, Hew., *lais*, Cr., *borneensis*, Wall., *agondas*, Boisd., figured, pl. lxxxvi; STAUDINGER, *Exot. Schm.*

ERYCINIDÆ.

Libythea motya, Boisd., *geoffroyi* var. *batchiana*, Wall., figured, pl. lxxxvii; STAUDINGER, *Exot. Schm.*

L. orientalis, Solomon Islands, GODMAN & SALVIN, *Ann. N. H.* (6) i, p. 211, n. sp.

Dodona ouida, Moore, figured, pl. lxxxvii; STAUDINGER, *Exot. Schm.*

Zemeros flegyas, Cr., figured, pl. lxxxvii; STAUDINGER, *Exot. Schm.*

Abisara segecia, Hew., *savitri*, Feld., *tepahi*, Boisd., figured, pl. lxxxvii; STAUDINGER, *Exot. Schm.*

A. geryon, Angola, STAUDINGER, *Exot. Schm.*, p. 239, pl. lxxxviii, n. sp.

Tazila, scent-apparatus in; HAASE, CB. *Iris*, i, p. 315. *T. tanita*, *telesia*, Hew., figured, pl. lxxxvii; STAUDINGER, *Exot. Schm.*

Dicallaneura decorata, Hew., scent-apparatus in; HAASE, CB. *Iris*, i, p. 316. *D. pulchra*, Guér., figured, pl. lxxxvii; STAUDINGER, *Exot. Schm.*

Stiboges nymphidia, Butl., figured, pl. lxxxvii; STAUDINGER, *Exot. Schm.*

Euselasia ewiteus, Cr., *eutychus*, *efflata*, Hew., *mys*, H.-S., var. *aurantia*, Butl., *euepla*, S. & G., *lisias*, Cr., var. *lysimaachus*, Stgr., *eugeon*, Hew., *thucydides*, Fab., figured, pl. lxxxvii; STAUDINGER, *Exot. Schm.*

E. hahneli, *dolichos*, Pebas, STAUDINGER, *Exot. Schm.*, p. 240, pl. lxxxvii, *lyceus*, Brazil, p. 241, n. spp.

Methonella cecilia, Cr., figured, pl. lxxxvii; STAUDINGER, *Exot. Schm.*

Hades noctula, Westw., figured, pl. lxxxvii; STAUDINGER, *Exot. Schm.*

Helicopsis acis, F., figured, pl. lxxxvii; STAUDINGER, *Exot. Schm.*

Alesu prema, Godt., *amosis*, Cr., figured, pl. lxxxviii; STAUDINGER Exot. Schmett.

Eurybia carolina, Godt., *halimede*, Hüb., *lycisca*, Doub., *donna*, Feld. figured, pl. lxxxviii; STAUDINGER, Exot. Schmett.

Eunogyra satyrus, West., figured, pl. lxxxviii; STAUDINGER, Exot. Schmett.

Mesosemia acuta, Hew., *grandis*, Druce, *loruhama*, *cippus*, Hew., *egabella*, Bates, *thymetina*, Butl., *crasus*, Fab., *philemon*, Cr., *lepida*, S. & G., *tenera*, Westw., figured, pl. lxxxviii; STAUDINGER, Exot. Schmett.

M. toska, Upp. Amazons, p. 243, pl. lxxxviii, *sibyllina*, Colombia, p. 244, pl. lxxxviii, STAUDINGER, Exot. Schmett., n. sp.

Cremna ceneus var. *heteræa*, Bates, *eucharila*, Bates, var. figured, pl. lxxxviii; STAUDINGER, Exot. Schmett.

Hyphilaria parthenis, Doubl., figured, pl. lxxxviii; STAUDINGER, Exot. Schmett.

Themone pais, Hubn., figured, pl. lxxxviii; STAUDINGER, Exot. Schmett.

Nothome eumeus, Fab., figured, pl. lxxxviii; STAUDINGER, Exot. Schmett.

Monethe albertus, Feld., figured, pl. lxxxix (as *paulus*, Stgr.); STAUDINGER, Exot. Schmett.

M. cajetanus, Colombia, STAUDINGER, Exot. Schmett. p. 245, n. sp.

Cartea tapajona, Bates, figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Lynnas melanochlora, S. & G., *jurbas*, Fab., *xenia*, Hew., figured, pl. lxxxix, with *jurbas*, n. var. *epijurbas*, p. 245; STAUDINGER, Exot. Schmett.

Aculhua cinaron, Feld., figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Xenandra helius, Cr., figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Rusalkia marathon, Feld., figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Chamelimnas briola, Bates, figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Isapis agyrtus, Cr., figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Barbicornis basilis var. *dibaphina*, Butl., figured; STAUDINGER, Exot. Schmett. pl. lxxxix.

Panara thisbe, F., figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Lyropteryx apollonia, Westw., *lyra*, Saund., figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Cyrenia martia, Westw., figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Necyria manco, *hewitsonii*, Saund., figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

N. diva, Cauca Valley, STAUDINGER, Exot. Schmett. p. 247, pl. lxxxix, n. sp.

Ancyluris melibæus, Fab., *formosissima*, Hew., *inca*, Saund., figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Diorhina periander, Cr., ♂ ♀, *bules*, L., figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Euerycina delphinia, Amazons Valley, STAUDINGER, p. 248 (figured, pl. lxxxix, as *Diorhina delphinia*), Exot. Schmett., n. sp.

Zeonia sylphina, Bates, figured, pl. lxxxix; STAUDINGER, Exot. Schmett.

Ithomeis heliconina, Bates, fig. . 25; STAUDINGER, Exot. Schmett.

- I. corinna*, Upp. Amazons, STAUDINGER, Exot. Schmett. p. 249, pl. n. n. sp.
- Pheles heliconides*, H.-S., figured, pl. xc; STAUDINGER, Exot. Schmett.
- Comptoseria cascella*, Hew., figured, pl. xc; STAUDINGER, Exot. Schmett.
- Lepricornis incerta*, Upp. Amazons, STAUDINGER, p. 249, Exot. Schmett. (figured, pl. xc, as *Pheles incerta*), n. sp.
- Tmetoglene drymo*, S. & G. (as *M. dinora*, Bates), *esthema*, Feld., figured; STAUDINGER, Exot. Schmett. pl. xc.
- Esthemopsis lithosina*, Bates, *strigosa*, Stgr., figured, pl. xc; STAUDINGER, Exot. Schmett.
- E. cilnia*, Colombia and Venezuela, p. 250, pl. xc, STAUDINGER, Exot. Schmett., n. sp.
- Syrmatia dorilas*, Cr., figured, pl. xc, *lamia*, Bates, n. var. *esthema*, p. 250; STAUDINGER, Exot. Schmett.
- S. astraea*, Ega, STAUDINGER, p. 250, Exot. Schmett., n. sp.
- Siseme minerva*, Feld., *alectryo*, Westw., figured, pl. xc; STAUDINGER, Exot. Schmett.
- Riodina lysippus*, L., figured, pl. xc; STAUDINGER, Exot. Schmett.
- Amarnthis merneria*, Cr., *hypochalybe*, Feld., figured, pl. xc; STAUDINGER, Exot. Schmett.
- Zelotaea peller*, Brazil, STAUDINGER, p. 251, pl. xc, n. sp.
- Dysmathia portia*, Bates, figured, pl. xc, STAUDINGER, Exot. Schmett.
- D. cindra*, Lower Amazons, STAUDINGER, Exot. Schmett. p. 251, pl. n. n. sp.
- Anteros chrysus*, Cr., *acanthoides*, H.-S., var. *spicata*, Stgr., *renaldas*, Stoll, *kupris*, Hew., figured, pl. xc; STAUDINGER, Exot. Schmett.
- Emesis fastidiosa*, Men., ♂ ♀, *heterochroa*, Hopff., *mandana*, Cr., *fatimella*, Westw., figured, pl. xc; STAUDINGER, Exot. Schmett.
- E. emesia*, Pebas, STAUDINGER, Exot. Schmett. p. 253, pl. xc, n. sp.
- Parnes philotes*, Westw., figured, pl. xci; STAUDINGER, Exot. Schmett.
- Symmachia amazonica*, Bates, *rubina*, Bates (*irata*, Butl.), *probetor*, Cr., *accusatrix*, Westw., figured, pl. xci; STAUDINGER, Exot. Schmett.
- S. sponsa*, *rita*, *maeonius*, Upp. Amazons, *scurra*, Chanchamayo, p. 253, *jugurtha*, Colombia, p. 254, pl. xci, STAUDINGER, Exot. Schmett., n. spp.
- Cricosoma rypete*, Hew., figured, pl. xci; STAUDINGER, Exot. Schmett.
- C. batesi*, Upp. Amazons, STAUDINGER, Exot. Schmett. p. 254, pl. xci, n. sp.
- Mesene phareus*, Cr., *ignicauda*, S. & G., *margaretta*, Wh., *tricolor*, Hew., figured, pl. xci; STAUDINGER, Exot. Schmett.
- M. noctis*, Colombia, STAUDINGER, Exot. Schmett. p. 254, pl. xci, n. sp.
- Pachythone gigas*, G. & S., ♀ figured, pl. xci; STAUDINGER, Exot. Schmett.
- Calydna thersander*, Cr., ♂ ♀, *caleta*, *catana*, *cabira*, Hew., figured, pl. xci; STAUDINGER, Exot. Schmett.
- Charis monogramma*, Bates, *theodora*, Feld., *laverna*, S. & G. (as *catenus*, L.), *holosticta*, S. & G., figured, pl. xci; STAUDINGER, Exot. Schmett.
- C. analfreda*, Upp. Amazons, *barine*, *saphirina*, Colombia, STAUDINGER, Exot. Schmett. p. 256, pl. xci, n. spp.
- Crociozona fasciata*, Hopff., figured, pl. xci; STAUDINGER, Exot. Schmett.

Metacharis lucius, Fab., figured, *erythromelas*, Sepp., ♀, figured, genus queried, p. 256; STAUDINGER, Exot. Schmett. pl. xci.

M. melusina, Colombia, STAUDINGER, Exot. Schmett. p. 256 (on pl. xci as *erythromelas* ♂), n. sp.

Bæotis zonata, Feld., *melanis*, Hübn., figured, pl. cclvii; STAUDINGER, Exot. Schmett.

Lasaia meris, Cr. (as *arsis*, Stgr.), *militaris*, Hopff., figured, pl. xci; STAUDINGER, Exot. Schmett.

L. moeros, Chanchamayo, *narees*, S. America, with var. *sula*, L. (P) *chama*, pl. xci, Venezuela, STAUDINGER, Exot. Schmett. p. 257, n. spp.

Hopfferia, n. g. for the above *L. (?) militaris*; STAUDINGER, Exot. Schmett. p. 257.

Tharops menander, *hebrus*, Cr., *felsina*, Hew., figured, pl. xci; STAUDINGER, Exot. Schmett.

Lemonias emylus, Cr., ♂ ♀, *cuprea*, Butl., *eudias*, Hew., *adelina*, Butl., figured, pl. xcii; STAUDINGER, Exot. Schmett.

L. florus, *juanita*, Colombia, *fusus*, Upp. Amazons, p. 258, *calvus*, Chanchamayo, p. 259, pl. xcii, STAUDINGER, Exot. Schmett., n. spp.

Callima irens, Westw., figured, pl. cclix; STAUDINGER, Exot. Schmett.

Anatole egaensis, Butl., *theages*, G. & S., figured, pl. xcii; STAUDINGER, Exot. Schmett.

Echenais penthea, Cr., ♂ ♀, *aristus*, Stoll., figured, pl. xcii; STAUDINGER, Exot. Schmett.

Apodemia erostratus, Doubl., *albinus*, Feld., figured, pl. xcii; STAUDINGER, Exot. Schmett.

Thisbe irenæa, Cr., ♂ ♀, figured; STAUDINGER, pl. xcii, Exot. Schmett.

Imelda glaucosmia, Hew., figured, pl. xcii; STAUDINGER, Exot. Schmett.

Nymphidium gnosia, Boisd., *præclarum*, Bates (as *phyleus*, Cr.), *abaris*, Cr., *lycorias*, Hew., var. *germanus*, S. & G., *velabrum*, S. & G., *acherois*, Boisd., *lamis*, Cr., *lysimon*, Stoll., *ascolia*, Hew., *leucosia*, Hb., var. *ninias*, Hew., *mantus*, Cr., figured, pl. xcii; STAUDINGER, Exot. Schmett.

N. balbinus, *licinias*, Colombia, STAUDINGER, Exot. Schmett. p. 261, pl. xcii, n. spp.

Catagrammina tapaja, Saund., ♀ figured, pl. xcii; STAUDINGER, Exot. Schmett.

Theope virgilius, Fab., *basilea*, Bates, *pedias*, H. S., *barea*, S. & G., *eurygonina*, n. var. *columbiana*, *eudocia*, Doubl., *pieridoides*, Feld., figured, pl. xciii; STAUDINGER, Exot. Schmett.

Pandemos pasiphaë, Cr., ♂ ♀ figured, pl. xciii; STAUDINGER, Exot. Schmett.

Astraeodes (Schatz) *arcuta*, Doubl., figured, pl. xciii; STAUDINGER, Exot. Schmett.

Aricoris cephu, Fab., ♂ ♀, *jansoni*, Butl., *butleri*, *gelasine*, *flammula*, Bates, *velutina*, *cruentata*, Butl., figured, pl. xciii; STAUDINGER, Exot. Schmett.

A. salvini, *heliodora*, Upp. Amazons, STAUDINGER, Exot. Schmett. p. 264, pl. xciii, n. spp.

Uranis hyalina, Butl., figured, pl. xciii; STAUDINGER, Exot. Schmett.

Stalactis phlegia, Cr., *caliope*, L., n. var. *bicolor*, *magdalena*, Dobl., n. var. *cleove*, *euterpe*, L. (n. varr. *latefasciata*, *adelphe* described p. 253), *phodusa*, Hb., n. var. *phaloë* (as *lineata*, Guer.), *lineata*, Guer. (as *phaloë*, Stgr.), figured; STAUDINGER, Exot. Schmett. pl. xciii.

LYCÆNIDÆ.

Note on the forms in which a transverse slit exists on the seventh abdominal segment of the larva; SCUDDER, P. Bost. Soc. xxiii, p. 357.

Pseuderesia helena, W. Africa, DRUCE, Ent. M. M. xxv, p. 108, n. sp.

Tingra abraxas, Westw., fig. 7, *maculata*, Kirby, figs. 8, 9, & 10, African Lycænidae v, figured and described; SMITH, Rhop. ex.

T. mylothrina, Centr. Africa, BUTLER, P. Z. S. 1888, p. 67; *T. bipunctata*, W. Africa, DRUCE, Ent. M. M. xxv, p. 109 : n. spp.

Teriomima similis, figs. 1 & 2, *tenera*, figs. 3 & 4, *puella*, figs. 9 & 10, *impunctata*, figs. 11 & 12, figured; SMITH, Rhop. ex., African Lycænidae, pl. iii. *T. (?) hildegarda*, Kirby, figs. 7 & 8, *dispar*, Kirby, figs. 9-11, t. c. pl. iv, *erasmus*, Kirby, figs. 1 & 2, *flaveola*, Kirby, figs. 3-5, *erastus*, Hew. (sub *Pieris*), fig. 6, t. c. v, figured and described; SMITH, Rhop. ex.

T. melissa, W. Africa, DRUCE, Ent. M. M. xxv, p. 109, n. sp.

Citrinophila marginalis, figs. 5 & 6, *limbata*, figs. 7 & 8, figured; SMITH, Rhop. ex., African Lycænidae, pl. iii.

Zizera squalida, Butl., variation noticed; BUTLER, Ann. N. H. (6) i, p. 149.

Plebeius, scent-apparatus in; HAASE, OB. Iris, i, p. 316.

Tarucus pulcher, Murr., seasonal form of; BUTLER, P. Z. S. 1888, p. 68.

Larinopoda albula, W. Africa; DRUCE, Ent. M. M. xxv, p. 108, n. sp.

Pseudaletis, n. g., for *P. agrippina*, n. sp., Cameroon Mountains, and *Spindasis clymenus*, Dr.; DRUCE, Ent. M. M. xxiv, p. 259.

Megisba malaya, and presumed spp. allied, discussed; ELWES, Tr. E. Soc. 1888, p. 375.

Chilades pontis, Elwes, figured, pl. viii, fig. 4; ELWES, Tr. E. Soc. 1888.

Camena ctesia, Hew., figured, pl. viii, fig. 6, ELWES, Tr. E. Soc. 1888.

Rusticus scudderii, habits of larva; SCUDDER, Psyche, v, p. 13.

Pentila tropicalis, Boisd., figured, pl. xciv; STAUDINGER, Exot. Schmett.

P. proussi, *pauli*, W. Africa, STAUDINGER, Exot. Schmett. p. 267, n. spp.

Liptena parca, Kirby, figs. 1-4, African Lycænidae iv, figured and described; SMITH, Rhop. ex. *L. amckeii*, Dew. (as *acraea*) *astanga*, Trin., *lireata*, Hew., figured, pl. xciv, STAUDINGER, Exot. Schmett.

L. libussa, Sierra Leone, p. 268, STAUDINGER, Exot. Schmett.; *L. rubrica*, W. Africa, DRUCE, Ent. M. M. xxv, p. 108; *L. muetra*, fig. 21, *simplicia*, fig. 14, W. Africa, p. 63, MÖSCHLER, Abh. Senck. Ges. xv : n. spp.

Durbania amakosa, Trim., figured, pl. xciv; STAUDINGER, Exot. Schmett.

D. amabilis, Transvaal, p. 268, STAUDINGER, Exot. Schmett., n. sp.

Deloneura immaculata, Trim., figured, pl. xciv; STAUDINGER, Exot. Schmett.

Epitola carcina, Hew., figured, pl. xciv; STAUDINGER, Exot. Schmett.

E. leonina, Sierra Leone, STAUDINGER, t. c. p. 268, n. sp.

Phytala elais figured, pl. xciv, STAUDINGER, Exot. Schmett.

Liphyra brassolis, Westw., note on; WESTWOOD, Tr. E. Soc. 1888, p. 470. *L. brassolis*, West., figured, pl. xciv; *L. vininga*, Hew., generic position queried, p. 269; STAUDINGER, Exot. Schmett.

Miletus hamada, Druce, discussed and referred to *Neopithecopis*; ELWES, Tr. E. Soc. 1888, p. 374. *M. horafeldi*, Moore, figured, pl. xciv; STAUDINGER, Exot. Schmett.

M. insignis, Sylhet, pl. xciv, p. 269, STAUDINGER, Exot. Schmett., n. sp.

Allotinus major, Feld., noticed as consisting of two species; STAUDINGER, Exot. Schmett. *A. albatus*, Feld., figured as *major*, Feld., pl. xciv, n. var. *mazimus*, described, p. 269; *id. t. c.*

Lucia bibulus, Fab., figured, pl. xciv; STAUDINGER, Exot. Schmett. *L. (?) brunnea*, Kirby, figs. 5 & 6, African Lycænidae, iv, figured and described; SMITH, Rhop. ex.

Aziocerces thysbe, L., *perion*, Cr., figured, pl. xciv; STAUDINGER, Exot. Schmett.

Arrugia protumnus, L., figured, pl. xciv; STAUDINGER, Exot. Schmett.

Feniseca tarquinius, Fab., figured, pl. xciv; STAUDINGER, Exot. Schmett.

Polyommatus dispar, n. var. *dahurica*; GRAESER, B. E. Z. xxxii, p. 75. *P. solskyi*, Ersch., n. var. *fulminans*, *theramon*, Esp., n. var. *alaica*; GRUM-GRSHIMAILO, p. 305, Hor. Ent. Ross. xxii.

P. alpherakii, Central Asia, GRUM-GRSHIMAILO, p. 305, Hor. Ent. Ross. xxii; *P. uranites*, p. 827, *cyanites*, p. 828, West Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii: n. spp.

Chrysophanus kusyapa, Moore, figured, pl. xciv; STAUDINGER, Exot. Schmett.

Niphanda cymbia, Nicev., figured, pl. cxiv; STAUDINGER, Exot. Schmett.

Lycæna icarus, Rott., var. figured, pl. i, fig. 3, noticed, p. 62; P. S. Lond. E. Soc. 1887; Hufn., monstrosity with five wings; HONRATH, B. E. Z. xxxii, p. 498, pl. vii, fig. 9: gynandromorphic example; BRAZENOR, Ent. xxi, p. 185. *L. alexis*, Hb., ♀ variety; HALL, Ent. M. M. xxv, p. 103. *L. semiargus*, Rott., malformation of wings; FROMHOLZ, B. E. Z. xxxii, p. 231, pl. ii, fig. 9. *L. corydon*, hermaphrodite; SMITH, Ent. xxi, p. 13: habitat; JEFFERYS, t. c. *L. maha*, Koll., *argia*, Men., *japonica*, Murr., *diluta*, Feld., and *similis*, Moore, are all one species, which is probably *otis*, F., p. 381; *L. theophrastus*, = (*nara*, Koll.), p. 382; *L. parrhasius*, F., and *dipora*, Moore, are probably not distinct from *argiades*, Pall., p. 383; ELWES, Tr. E. Soc. 1888. *L. heathi*, Cox, life history; MATHEW, t. c. pp. 151 & 152. *L. americana*, sound sleep of; SOULE, Psyche, v, p. 42. *L. sonorensis*, Feld., habits; WRIGHT, Ent. Am. iv, pp. 71 & 72. *L. piasus*, Boisd., notes on; *id.* p. 97, Canad. Ent. xx. *L. (Thecla, ant.) reboria*, E., systematic position of; SPEYER, S. E. Z. xlix,

p. 211. *L. nyseus*, Guer., *elorea*, Fab., *phœnix*, Rüb. (as *moeros*, Sigr.), *hintza*, Trim., *hylax*, Fab., *schæffera*, Esch., *danis*, Cr., *euchylas*, Hb., *bochus*, Cr. (as *plato*, Fab.), *aratus*, Cr., *nycula*, Moore, *zanthospilos*, Hb., *thius*, Hb., figured on pl. xciv ; STAUDINGER, Exot. Schmett.

L. elorina, Sierra Leone, p. 271, *griseldis*, Waigiou, pl. xciv, *gisselle*, Moluccas, p. 272, STAUDINGER, Exot. Schmett. ; *L. eleusis* (Boisd.), Egypt, DEMAISON, p. lxvi, Bull. Soc. Ent. Fr. (6) viii ; *L. bellou*, Afghanistan, *kogistana*, *dagmara*, *chrysopsis*, Central Asia, GRUM-GRESHMALLO, p. 306, Hor. Ent. Ross. xxii ; *L. tancrei*, Amurland, GRAESER, p. 77, B. E. Z. xxxii ; *L. ramon*, p. 189, fig. 4, *martha*, p. 190, fig. 5, Ecuador, DOGNIN, Le Nat. (2) i : n. spp.

Pseudodipsas lycœnoides, Feld., and *sylvanus*, Dr., n. var. *natalensis*, figured, pl. xciv ; STAUDINGER, Exot. Schmett.

Hypochrysops polycletus, L., *apelles*, F., figured, pl. xciv ; STAUDINGER, Exot. Schmett.

H. zeuzis, Halmahera, p. 273, pl. cxiv, STAUDINGER, Exot. Schmett., n. sp.

Dipsas duma, Hew., figured, pl. xciv ; STAUDINGER, Exot. Schmett.

Aphnaeus orcas, *natalensis*, Dbl., *syama*, Horsf., figured, pl. xciv ; STAUDINGER, Exot. Schmett.

A. erna, Transvaal, STAUDINGER, Exot. Schmett. p. 274, n. sp.

Carpys alphas, Cr., figured, pl. xciv ; STAUDINGER, Exot. Schmett.

Nerda androcles, Dbl., *brahma*, Moore, figured, pl. xciv ; STAUDINGER, Exot. Schmett.

Ialmenus evagoras, Don., life history ; MATHEW, Tr. E. Soc. 1888, pp. 153 & 154 : figured, pl. xciv ; STAUDINGER, Exot. Schmett.

I. eichhorni, Cooktown, STAUDINGER, p. 275, Exot. Schmett., n. sp.

Poritia, scent-apparatus in ; HAASE, CB. Iris, i, p. 317. *P. hewitsoni*, Moore, figured, pl. xciv ; STAUDINGER, Exot. Schmett.

Simiskina polina, Hew., figured, pl. xciv ; STAUDINGER, Exot. Schmett.

Camena ctesia, Hew., figured, pl. xciv ; STAUDINGER, Exot. Schmett.

Iolaus, scent-apparatus in ; HAASE, CB. Iris, i, p. 317. *I. silas*, Westw., *bowkeri*, Trim., *anysis*, Hew., *longinus*, Fab., *kühni*, Rüb. (as *regulus*, Stgr.) figured, pl. xciv ; STAUDINGER, Exot. Schmett.

Sithon, scent-apparatus in ; HAASE, CB. Iris, i, p. 318. *S. pallens*, Wallgr., *orpheus*, Feld., *hiemalis*, S. & G. (as *nivea*), *acte*, Moore, *freja*, Fab., *ravindra*, Horsf., *amor*, F., *nedymond*, Cr., *orsolina*, Hew., *isabella*, Feld., figured, pl. xciv ; STAUDINGER, Exot. Schmett.

S. antimachus, Gaboon, pl. xciv, *leonis*, Sierra Leone, p. 276, *thaliarchus*, Minahassa, p. 277, pl. xciv, *tibullus*, Halmahera, pl. xciv, p. 278, STAUDINGER, Exot. Schmett., n. spp.

Myrina, scent-apparatus in ; HAASE, CB. Iris, i, p. 318. *M. silenus*, Fab., figured, pl. xciv ; STAUDINGER, Exot. Schmett.

Locura atymnus, Cr., figured, pl. xciv ; STAUDINGER, Exot. Schmett.

Dendroris, scent-apparatus in ; HAASE, CB. Iris, i, p. 318. *D. diocles*, Hew., *epijarbas*, Moore, *eryx*, L., *domitia*, Hew., figured, pl. xcvi ; STAUDINGER, Exot. Schmett.

D. enipeus, Celebes, *intermedius*, Andaman Is., STAUDINGER, p. 279, Exot. Schmett., n. spp.

Iraota boscelliana, Dist., *timoleon*, Stoll., figured, pl. xcvi; STAUDINGER, Exot. Schmett.

Curetis thetys, Dr., *butis*, Dbl., figured, pl. xcvi; STAUDINGER, Exot. Schmett.

Arhopala, Boisd., is a valid genus, p. 280; *A. hercules*, Hew., *micale*, Bl., var. *superba*, Rüb., *camdeo*, Moore, *anthore*, Hew., *agnis*, Feld., *aurea*, Hew., *critala*, Feld., *gunesa*, Moore, figured, pl. xcvi; STAUDINGER, Exot. Schmett. *A. helius*, Cr., noticed, with n. var. *anthelius* = (*♀ helius*, Hew.); *hercules*, Hew., n. var. *herculina*; *id. t. c.* p. 280.

A. argentea, Celebes, p. 281, pl. xcvi, STAUDINGER, Exot. Schmett., n. sp.

Amblypodia quercetorum, Moore, ♂ ♀, figured, pl. xcvi; STAUDINGER, Exot. Schmett.

A. annetta, Batchian, p. 281, pl. xcvi, with var. *anna*, p. 282, STAUDINGER, Exot. Schmett., n. sp.

Ogyris genoveva, Hew., ♂ ♀, figured, pl. 96, STAUDINGER, Exot. Schmett.

Catapœcilma elegans, Druce, figured, pl. xcvi; STAUDINGER, Exot. Schmett.

Hypolycæna virgo, figured, pl. viii, fig. 7; *H. chandruna*, Moore, = (*grotei*, Moore), p. 387; ELWES, Tr. E. Soc. 1888. *H. erylus*, Godt., *etolus*, Fabr., *sipylus*, Feld., *philippus*, Fab., *lara*, L., figured, pl. xcvi; STAUDINGER, Exot. Schmett.

H. noctula, Cooktown, p. 283, pl. xcvi, STAUDINGER, Exot. Schmett.; *H. (Tatura) pachalica*, Centr. Africa, BUTLER, P. Z. S. 1888, p. 69; n. spp.

Thecla rubi, L., food plant of larva; FLETCHER, Ent. M. M. xxv, p. 15. *T. regalis*, Cr., *tuneta*, Hew., *imperialis*, Cr., *tagyra*, Hew., *hemon*, Cr., *mavors*, Hb., *caranus*, Cr., *bacis*, S. & G., n. var. *vulnerata*, *barajo*, Reak. (as *desdemona*, Hew.), *nautes*, Cr., *marsyas*, L., *phaleros*, L., *linus*, Sulz. (as *ætolus*, Cr.), *pelion*, Cr., *argiva*, Hew., *endymion*, F., *echion*, L. (as *crolus*, Cr.), *simaethis*, Dru., *thales*, F., *sista*, Hew., *demonassa*, Hew., *commodus*, Feld., figured, pl. xcvi; STAUDINGER, Exot. Schmett. *T. argiva* n. var. *obscura*, described, p. 286; *id. t. c.*

T. dolosa, Venezuela, p. 286, pl. xcvi (as *dolytas*, Cr.), *hahneli* and *adela*, Amazons, p. 286, pl. xcvi, STAUDINGER, Exot. Schmett., n. spp.

Lamprospilus genius, Hb., figured, pl. xcvi; STAUDINGER, Exot. Schmett.

Trichonis theanus, Cr., figured, pl. xcvi; STAUDINGER, Exot. Schmett.

Micantra (Schatz, n. g.), *platyptera*, Feld., figured, pl. xcvi; STAUDINGER, Exot. Schmett.

M. ? sapfo, Colombia, p. 289, pl. xcvi, STAUDINGER, Exot. Schmett., n. sp.

Theorema eumenia, Hew., figured, pl. xcvi; STAUDINGER, Exot. Schmett.

Eumæus atala, habits in Florida, life history; SCHWARZ, Ins. Life, i, pp. 37-40, fig. 6. *E. debora*, Hb., *atala*, Poey, figured, pl. xcvi; STAUDINGER, Exot. Schmett.

HESPERIIDÆ.

Note on the scales; SCUDDER, *Psyche*, v, p. 139: remarks on the extent of the family, &c.; STAUDINGER, *Exot. Schmett.* p. 290.

Thymele chalco, Hb., *proteus*, L., *exadeus*, Cr., figured, pl. xcviii; STAUDINGER, *Exot. Schmett.*

T. grullus, Chiriqui, MABILLE, *Le Nat.* (2) ii, p. 147, fig. 7; *T. virgatus*, Brazil, fig. 6, *eudemus*, Chiriqui, fig. 7, *viridans*, Upp. Amazon, fig. 8, p. 170, *fulviluna*, Brazil, p. 171, fig. 9, *neobulus*, fig. 1, *eudicus*, fig. 2, p. 180, Brazil, *euphronius*, Yuruty, p. 181, fig. 3, *id. t. c.*, n. spp.

Eudamus leucites, Colombia, p. 98, fig. 2, *calenus*, Guatemala, fig. 3, *megaeles*, fig. 4 (no locality), *callias*, fig. 5 (no locality), p. 99, *eleus*, fig. 1, *metallescens*, fig. 2, Brazil, p. 108, *leucogramma*, Porto Cabello, fig. 3, *glaphyrus*, fig. 4, *talhybius*, fig. 5, p. 109, Brazil, MABILLE, *Le Nat.* (2) ii, n. spp.

Plestia, n. g., for *P. staudingeri*, n. sp., Guatemala, fig. 1; MABILLE, *Le Nat.* (2) ii, p. 146.

Lignyostola, n. g., for *L. pemphigargyra*, n. sp., Chiriqui; MABILLE, *Le Nat.* (2) ii, p. 221.

Anastrus eugrammus, Chiriqui, MABILLE, *Le Nat.* (2) ii, p. 221, fig. 2, n. sp.

Telemiades misitheus, Chanchamayo, fig. 3, *megallus*, Rio San Juan, fig. 4, MABILLE, *Le Nat.* (2) ii, p. 221, n. spp.

Anisochoria albida, Amer. mer., MABILLE, *Le Nat.* (2) ii, p. 242, fig. 3, n. sp.

Ephyriades pallida, Pebas, fig. 4, *xantholeuce*, Chiriqui, fig. 5, MABILLE, *Le Nat.* (2) ii, p. 242, n. spp.

Telegonus chiriquensis, Stgr., *midas*, Cr., figured, pl. xcvi; STAUDINGER, *Exot. Schmett.*

T. erythras, Lower Amazons, fig. 3, *gillo*, Coary, fig. 4, *galesus*, Chanchamayo, fig. 5, *glarus*, Lower Amazons, fig. 6, p. 147, MABILLE, *Le Nat.* (2) ii; *T. herus*, Porto Cabello, fig. 1, *dexo*, fig. 2, p. 169, *evathlus*, fig. 3, *gallius*, fig. 5, Chiriqui, *mithras*, fig. 4, Porto Cabello, p. 170, *id. t. c.*: n. spp.

Casyapa corvus, scent-apparatus in; HAASE, *CB. Iris*, i, p. 319. *C. thrax*, L., figured, pl. xcvi; STAUDINGER, *Exot. Schmett.*

C. lunula, Waigiu, fig. 4, *navifera*, Batchian, fig. 5, MABILLE, *Le Nat.* (2) ii, p. 77, n. spp.

Cecina calathana, Hew., figured, pl. xcvi; STAUDINGER, *Exot. Schmett.*

Aethilla china, Hew., figured, pl. xcvi; STAUDINGER, *Exot. Schmett.*

A. hahneli, Venezuela, STAUDINGER, p. 291, pl. xcvi (as *Thyris cassander*), *Exot. Schmett.*, n. sp.

Chacteneme? lidderdali, Sikkim, ELWES, *Tr. E. Soc.* 1888, p. 459, n. sp.

Spathilepia clonius, Cr., figured, pl. xcvi; STAUDINGER, *Exot. Schmett.*

Thracides aristoteles, Dbl., *salus*, var. *antoninus*, Latr., figured, pl. xcvi; STAUDINGER, *Exot. Schmett.*

Udranomia orcinus, Feld., figured, pl. xcvi; STAUDINGER, *Exot. Schmett.*

Arteurotia tractipennis, Butl., figured, pl. xcvi; STAUDINGER, Exot. Schmett.

Entheus pelex, L., and *talaus*, L., figured, pl. xcvi, and considered as one species, p. 293, *caeleste*, Dbl., figured, pl. xcvi; STAUDINGER, Exot. Schmett.

Iamene, scent-apparatus in; HAASE, CB. Iris, i, pp. 319 & 320. *I. pinistratus*, Fab., *benjaminii*, Guér., *doleschalli*, Feld., figured, pl. xcvi; STAUDINGER, Exot. Schmett.

I. plateni, Celebes, STAUDINGER, Exot. Schmett. p. 293, n. sp.

Capila jayadera, Moore, figured, pl. xcix; STAUDINGER, Exot. Schmett.

Oxytrichus hopfferi, Chiriqui (figured as *felderi*), pl. xcix, *confusa*, Chanchamayo, STAUDINGER, p. 294, Exot. Schmett., n. spp.

Syrictus mohammed, Ob., figured, pl. v, fig. 23; OBERTHUR, Études d'Ent. xii.

Thanaos, the New England species tabulated; SCUDDER, Psyche, v, p. 87.

Carterocephalus dieckmanni, Amurland, GRAESER, p. 102, B. E. Z. xxxii, n. sp.

Pyrrhopyge oratus, Druce (as *socrates*, Mén.), *esculapus*, Stgr., *telassa*, Hew., n. var. *telassina*, figured, pl. xcix; *P. telassa* n. var. *tenuis*, described, p. 295; STAUDINGER, Exot. Schmett.

Myrcelus phoronis, Hew., figured, pl. xcix, n. var. *caucanus* described, p. 295; STAUDINGER, Exot. Schmett.

Erycides spatiosa, Hew., *sela*, Hew., var. *oreades*, Hew., *zonara*, Hew., figured, pl. xcix; STAUDINGER, Exot. Schmett.

E. mazares, S. America, fig. 1, *marinus*, Brazil, fig. 2, *perillus*, Antioquia, fig. 3, MABILLE, Le Nat. (2) ii, p. 77: n. spp.

Carystus attina, Hew., scent-apparatus in; HAASE, CB. Iris, i, p. 321. *C. cynisca*, Swains, *phyllus*, Cr., *irava*, Moore, *laufella*, Hew., figured, pl. xcix; STAUDINGER, Exot. Schmett.

Pamphila, scent-apparatus in; HAASE, CB. Iris, i, p. 321. *P. menetriesi*, Latr., *amyntas*, F., *epictetus*, F., *hottentotta*, Latr., *augias*, L., *celsina*, Feld., figured, pl. xcix; STAUDINGER, Exot. Schmett.

P. phineus, Cr., pp. 179-181, *angustula*, H.-S., p. 181, metamorphoses; MATHEW, Tr. E. Soc. 1888.

P. ormuzd, Central Asia, GRUM-GRSHIMAILO, p. 307, Hor. Ent. Ross. xxii, n. sp.

Proteides farsa, Butl., *evadne*, Cr., figured, pl. xcix; STAUDINGER, Exot. Schmett.

Augiades atinas, no locality, p. 146, fig. 2, MABILLE, Le Nat. (2) ii, n. sp.

Thymelicus macomo, Trim., figured, pl. c; STAUDINGER, Exot. Schmett.

Hesperia polyctor, Pritt., *sandaster*, Tr., figured, pl. c; STAUDINGER, Exot. Schmett. *H. weiglei*, Plötz, redescribed, p. 65, and figured, fig. 18; MÖSCHLER, Abh. Senck. Ges. xv.

H. ilerda, W. Africa, fig. 16, MÖSCHLER, Abh. Senck. Ges. xv, p. 65, n. sp.

Leucochitonea petrus, Hb., *paradisea*, Butl., figured, pl. c; STAUDINGER, Exot. Schmett.

L. chalybs, Chanchamayo, fig. 1, *orbigera*, Brazil, fig. 2, MABILLE, Le Nat. (2) ii, p. 242, n. spp.

Apautus agraulia, Hew., larva and pupa noticed, p. 360, figured, pl. ix, figs. 3 & 3b; OLLIFF, Ann. N. H. (6) i.

A. bilineata, Ecuador, DOGNIN, Le Nat. (2) ii, p. 68, n. sp.

Pyrgus zebra, N.W. India, BUTLER, p. 207, Ann. N. H. (6) i, n. sp.

Brontiaides procas, Cr., figured, pl. c; STAUDINGER, Exot. Schmett.

Plastingia ? *plesioneurus*, Celebes, STAUDINGER, p. 299, pl. c, Exot. Schmett., n. sp.

Astictopterus, scent-apparatus in; HAASE, CB. Iris, i, p. 322. *A. diocles*, Moore, figured, pl. c; STAUDINGER, Exot. Schmett.

Plesioneura eligius, Cr., *galenus*, F., figured, pl. c.; STAUDINGER, Exot. Schmett. *P. pulomaya*, Moore, habits; ELWES, Tr. E. Soc. 1888, p. 463.

P. lamus, Obydos, MABILLE, Le Nat. (2) ii, p. 275, fig. 2; *P. bistrata*, Kilima-njaro; BUTLER, P. Z. S. 1888, p. 97: n. spp.

Teleso crypsargyra, p. 829, *chaostola*, p. 830, *dactyliota*, p. 831, *megalopis*, p. 832, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Exometeca, n. g., near *Teleso*, for *E. nycteris*, n. sp., W. Australia; MEYRICK, p. 833, P. Linn. Soc. N.S.W. (2) ii.

Cyclopidides subvittatus, = (*subradiatus*, Moore); ELWES, Tr. E. Soc. 1888, p. 453.

C. puellum, Chili, BARTLETT-CALVERT, Ent. M. M. xxv, p. 34, n. sp.

Parnara: the species found in Sikkim characterised and woodcuts given, pp. 445-448; ELWES, Tr. E. Soc. 1888.

Halpe sikkima, pl. xi, fig. 3 ♂, fig. 4 ♀?, *separata*, figs. 5 & 6, *cerata*, fig. 8, *zema*, fig. 7, figured; ELWES, Tr. E. Soc. 1888.

Netrocoryne denitza, Hew., figured, pl. c; STAUDINGER, Exot. Schmett. *N. repanda*, Feld., habits and metamorphoses, pp. 181-183, larva figured, pl. vi, fig. 5; MATHEW, Tr. E. Soc. 1888.

M. atilia, Minahassa, MABILLE, Le Nat. (2) ii, p. 98, fig. 1, n. sp.

Trapezites symmokus, Hb., figured, pl. c; STAUDINGER, Exot. Schmett.: habits and metamorphoses; MATHEW, Tr. E. Soc. 1888, pp. 183-185.

Hesperilla gremius, Fab., figured, pl. c; STAUDINGER, Exot. Schmett. *H. picta*, pp. 185-187, pl. vi, figs. 9 & 9a, *ornata*, Leach, p. 187, metamorphoses and habits; MATHEW, Tr. E. Soc. 1888.

Heteropterus metis, L., figured, pl. c; STAUDINGER, Exot. Schmett.

Butleria auripennis, Bl., figured, pl. c; STAUDINGER, Exot. Schmett.

Isotcinon atkinsoni, pl. xi, fig. 9, *cephala*, fig. 10, figured; ELWES, Tr. E. Soc. 1888. *I. masariensis*, Stgr.?, figured, pl. c; STAUDINGER, Exot. Schmett.

Pardalodes clippus, Cr., figured, pl. c; STAUDINGER, Exot. Schmett.

Pythouides hierax, Hopff., *lugia*, Hew., figured, pl. c; STAUDINGER, Exot. Schmett.

P. polla, fig. 1, Costa Rica, *subornatus*, fig. 2, Panama, MABILLE, Le Nat. (2) ii, p. 255, n. spp.

Nerula, n. g., for *N. nautes*, Brazil, figs. 3 & 4, *abbreviata*, Chérinqui, fig. 5, *pelia*, Lower Amazons, fig. 6, p. 255; MABILLE, Le Nat. (2) ii.

Cyclosemia albata, Chanchamayo, fig. 1, *parus*, Porto Cabello, fig. 2, MABILLE, Le Nat. (2) ii, p. 265, n. spp.

Pachyneuria, n. g., for *P. obscura*, n. sp., fig. 1, Chanchamayo; MABILLE, Le Nat. (2) ii, p. 275.

Nisionades tristis, Boisd., figured, pl. c; STAUDINGER, Exot. Schmett.

N. ptale, San Paulo, MABILLE, Le Nat. (2) ii, p. 221, fig. 1, n. sp.

Achlyodes osyris, Stgr., *asychis*, Cr., figured, pl. c; STAUDINGER, Exot. Schmett.

A. violacea, Ecuador, DOGNIN, Le Nat. (2) ii, p. 67, fig. 2, n. sp.

Antigonus erosus, Hb., *angulata*, Feld., figured, pl. c; STAUDINGER, Exot. Schmett.

A. taylori, N. W. India, BUTLER, Ann. N. H. (6) i, p. 208, n. sp.

Darpa hanria, Moore, figured, pl. c; STAUDINGER, Exot. Schmett.

Helias albiplaga, Feld., figured, pl. c; STAUDINGER, Exot. Schmett.

Caprona canopus, Tr., figured, pl. c; STAUDINGER, Exot. Schmett.

Tagiades trichoneura, Feld., *menaka*, Moore, figured, pl. c; STAUDINGER, Exot. Schmett.

Euschemon rafflesia, MacL., figured, pl. c; STAUDINGER, Exot. Schmett.

HETEROCERA.

Catalogue of the Moths of India, pt. III; COTES & SWINHOE (170).—Supplement to Grote's N. American Check-list; EDWARDS (220).—The classification of *Bombycida*; GROTE (342).

SPHINGIDÆ.

[Cf. DRUCE (207), EDWARDS (221, 222), GRAESER (327), MOORE (612), MÖSCHLER (618), POULTON (683), SMITH (848, 850).]

Monograph of N. American *Sphingidæ*, with discussions of early classification and nomenclature, and figures of male genitalia, &c.; SMITH, Tr. Am. Ent. Soc. xv, pp. 49–242, pls. iv–xiii.

Note on some sexual characters; SMITH, P. E. Soc. Wash. i, p. 92.

Cause of the attitude of *Sphingidæ* larvæ; position of *Sphingidæ* in classification; POULTON, Tr. E. Soc. 1888, pp. 568–574.

Hemaris diffinis, Boisd., parasites of; WEED, Ent. Am. iv, p. 147.

H. simillima, India, MOORE, P. Z. S. 1888, p. 391, n. sp.

Pterogon proserpina, note on larva; SEILER, Soc. Ent. iii, p. 75; BEUTELI, t. c. p. 98; FRANK, t. c. p. 107.

Euproserpinus euterpe, California, EDWARDS, Ent. Am. iv, p. 25, n. sp.

Pachygonia ericea, Panama, DRUCE, p. 235, Ann. N. H. (6) ii, n. sp.

Perigonia tacita, Panama, DRUCE, p. 236, Ann. N. H. (6) ii, n. sp.

Aleuron tachasara, Panama, DRUCE, p. 236, Ann. N. H. (6) ii, n. sp.

Ambulyx placida, Himalaya, MOORE, P. Z. S. 1888, p. 390, n. sp.

Dahira, n. g., p. 390, for *D. rubiginosa*, n. sp., Himalaya, p. 391; MOORE, P. Z. S. 1888.

Charocampa erotus, Cr., synonymy and variation; DRUCE, P. Z. S. 1888, p. 220.

C. jocasta, Guatemala, DRUCE, p. 237, Ann. N. H. (6) ii, n. sp.

Panacra saalmülleri, W. Africa, MÖSCHLER, fig. 23 & p. 68, Abh. Senck. Ges. xv, n. sp.

Protoparce weiglei, W. Africa, fig. 24 & p. 70, MÖSCHLER, Abh. Senck. Ges. xv, n. sp.

Deilephila vespertilio and *euphorbia*, hybrids between; ROGENHOFFER, SB. z.-b. Wien, xxxviii, p. 73. *D. lineata*, F., larva used as food; HUIET, Ent. Am. iii, p. 219. *D. euphorbiae*, L., malformation of pupa and imago; FROMHOLZ, B. E. Z. xxxii, p. 227, pl. ii, figs. 2, 3-3b. *D. gullii* in England in 1888; CARRINGTON, Ent. xxi, pp. 249-251, 273, & 274; pupation of; TUGWELL, Ent. M. M. xxv, p. 135.

Ampelophaga fasciosa, India, MOORE, P. Z. S. 1888, p. 391, n. sp.

Chlenogramma, n. g., for *Diludia jasminearum*; SMITH, Ent. Am. iii, p. 154, Tr. Am. Ent. Soc. xv, p. 197, and Ent. Am. iv, p. 93.

Exedrium (Grote), n. g., pp. 152 & 211, for *Sphinx halicarnae*, Strk.; SMITH, Tr. Am. Ent. Soc. xv.

Sphinx ligustri, L., malformation of pupa; FROMHOLZ, B. E. Z. xxxii, p. 229, pl. ii, figs. 4 & 5; stridulation of; DEMAISON, p. clxxxiv, Bull. Soc. Ent. Fr. (6) viii. *S. convolvuli*, ontogeny, pp. 515-554, numerous larvae and details figured, pls. xv & xvi; POULTON, Tr. E. Soc. 1888. *S. elsa*, full-grown larva; EDWARDS, Ent. Am. iv, p. 61. *S. luscitiosa*, larva described; SOULE, Psyche, v, p. 85.

Amphonyx staudingeri, Nicaragua, Panama, DRUCE, p. 237, Ann. N. H. (6) ii, n. sp.

Isognathus yucatanæ, Mexico, DRUCE, p. 238, Ann. N. H. (6) ii, n. sp.

Hyloicus haterius, Mexico, DRUCE, p. 239, Ann. N. H. (6) ii, n. sp.

Sphinx atropos, parthenogenesis in; MASSA (560).

Smerinthinae, note on the classification of; SMITH, P. E. Soc. Wash. i, p. 83.

Smerinthus ocellatus, food plants; POULTON, P. E. Soc. 1888, p. xxvii.

Polyptychus trilineatus, India, MOORE, P. Z. S. 1888, p. 390, n. sp.

ÆGERIIDÆ, THYRIDIDÆ, HETEROGYNIDÆ.

[Cf. EDWARDS (219), LEECH (491), MOORE (612), OBERTHUR (629), SMITH (849).]

Sciaeteron fersale, Japan, LEECH, p. 591, pl. xxx, fig. 3, P. Z. S. 1888, n. sp.

Sphecia romanori, pl. xxx, fig. 1, *S. (?) fieseni*, fig. 2, Japan, LEECH, p. 591, P. Z. S. 1888, n. spp.

Bembecia pernis, Japan, LEECH, p. 592, pl. xxx, fig. 5, n. sp.

Sesia pechi, Stgr., figured, pl. vii, figs. 52 & 52a; OBERTHUR, Études d'Ent. xii. *S. formicaformis*, habits; SCHWARZ, Soc. Ent. iii, p. 113. *S. culiciformis*, var. noticed; FROMHOLZ, Ent. xxi, p. 210.

Melittia gloriosa, Edw., habits of; RILEY, P. E. Soc. Wash. i, p. 85.

M. kulluana, India, MOORE, P. Z. S. 1888, p. 392, n. sp.

Ægeria impropria, Edw., ♀ described; RIVERS, Ent. Am. iv, p. 99; its habits; RILEY, P. E. Soc. Wash. i, p. 85.

Æ. montis, Japan, LEECH, p. 592, pl. xxx, fig. 4, P. Z. S. 1888, n. sp.

Phemonotus caudata, habits of; RILEY, P. E. Soc. Wash. i, p. 85.

Thyris nevadæ, Ob., figured, pl. vii, fig. 46; OBERTHUR, Études d'Ent. xii.

Platythyris, note on the position and synonymy of the genus; GROTE, Ent. Am. iv, p. 73.

Thia, n. g. (*Heterogynidae*), for *T. extraneu*, n. sp., S. California; EDWARDS, Ent. Am. iii, p. 181.

CASTNIIDÆ, URANIIDÆ, AGARISTIDÆ.

[Cf. DRUCE (206, 207), LEECH (491).]

Hecatesia fenestrata, Boisd., scent-apparatus in; HAASE, CB. Iris, i, p. 323.

Alcides latona, Solomon Is., DRUCE, p. 241, Ann. N. H. (6) ii, figured P. Z. S. 1888, pl. xxix, fig. 5, n. sp.

Pseudolyptia walkeri, Mexico, DRUCE, p. 239, Ann. N. H. (6) ii, n. sp.

Eusemia siriella, Solomon Is., DRUCE, P. Z. S. 1888, p. 571, pl. xxix, fig. 1, n. sp.

Scudrya venusta, Japan or Korea, LEECH, p. 614, pl. xxxi, fig. 2, P. Z. S. 1888, n. sp.

CHALCOSIIDÆ, PERICOPIDÆ, EUSCHEMIDÆ, HIMANTOPTERIDÆ.

[Cf. BUTLER (117), DRUCE (205, 206, 207, 208), ROGENHOFER (776).]

Chalcusia midamus, scent-apparatus in; HAASE, CB. Iris, i, p. 323. *C. palearctica*, Stgr., cf. *Lithosiidæ*.

Doratopteryx plumigera, Kilima-njaro, BUTLER, Ann. N. H. (6) i, p. 48, fig. 1, n. sp.

Dianeura, n. g., p. 49, for *D. goochii*, Natal, p. 49, and *jacksoni*, Kilima-njaro, p. 50, n. spp.; BUTLER, Ann. N. H. (6) i.

Histia dolens, Celebes, DRUCE, Ent. M. M. xxv, p. 62, n. sp.

Heteropan dolens, Fiji Is., DRUCE, P. Z. S. 1888, p. 220, pl. xiii, fig. 1, n. sp.

Gnophæla vermiculata, G. & R., larva described; BRUCE, Ent. Am. iv, p. 24.

Celerena perithea, Cr., scent-organ of; HAASE, CB. Iris, i, p. 328.

Epicopeia simulans, Japan, LEECH, p. 611, pl. xxxi, fig. 1, P. Z. S. 1888, n. sp.

Satara woodfordi, Solomon Is., DRUCE, P. Z. S. 1888, p. 576, pl. xxix, fig. 6, n. sp.

Bociraza vacuna, Solomon Is., DRUCE, P. Z. S. 1888, p. 576, pl. xxix, fig. 7, n. sp.

Milionia, n. sp., cf. *Lithosiidæ*.

Pedoptila staudingeri, W. Africa, ROGENHOFER, SB. z.-b. Wien, xxxviii, p. 61, n. sp.

ZYGÆNIDÆ, SYNTOMIDÆ.

[Cf. BAKER (35), DOGNIN (196), DRUCE (207, 208), GRAESER (327), LEECH (491), MEYRICK (587), OBERTHUR (629), RÖBER (770), RÜHL (785), WARREN (910).]

Northia ulmivora, Amurland, GRAESER, B. E. Z. xxxii, p. 107; *N. dirce*, pl. xxx, fig. 8, *cybele*, fig. 9, Korea, LEECH, p. 596, P. Z. S. 1888: n. spp.

Inope pellucida, Wladiwostok, GRAESER, B. E. Z. xxxii, p. 108, n. sp.

Pryeria sinica, Moore, ♀ described; LEECH, p. 594, P. Z. S. 1888.

Ino orana, Algeria, BAKER, Tr. E. Soc. 1888, p. 117, n. sp.

Procris fusca, pl. xxx, fig. 6, *nigra*, fig. 7, Japan, LEECH, p. 595, P. Z. S. 1888; *P. amethystina*, *empyrea*, W. Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 927: n. spp.

Zygena, structure of scales is peculiar; ROYSTON-PIGOTT, J. Quek. Club (2) iii, p. 205: of *Z. lonicera*, *minos*, and *ephiates*, specially noticed; *id.* pp. 206 & 207: origin of the markings of *Z.*, and their variation; RÜHL (785). *Z. lonicera*, Esp., anatomical note on; BRANDT (99). *Z. rubicundus*, Hb., is a good species, male organs figured, p. 238; STANFUS, B. E. Z. xxxii, p. 236. *Z. hilaris*, Ochs., pl. vii, figs. 48a, b, c, and var. *escorialensis*, fig. 48, figured and variations noticed, p. 23; *fausta* var. *junceae*, figured, pl. vii, figs. 49 & 49a; list of the Algerian species, with varietal remarks, pp. 24-27; OBERTHUR, Études d'Ent. xii. *Z. meliloti* var. noticed; BRIGGS, Ent. xxi, p. 232. *Z. lavandula*, var. described; WARBURG, t. c. p. 211. Hybrids between different species of *Zygena*; ROGENHOFER, SB. z.-b. Wien, xxxviii, p. 74. *Zygena* and *Ino*, note on venation in; SMITH, Soc. Ent. iii, p. 1; MÖSCHLER, t. c. p. 17.

Z. oberthuri, Sebden, BAKER, Tr. E. Soc. 1888, p. 118, n. sp.

Belemnina whiteleyi, British Guiana, DRUCE, Ent. M. M. xxv, p. 62, n. sp.

Eupyra splendens, Ecuador, DOGNIN, Le Nat. (2) ii, p. 152, n. sp.

Glaucopis pagenstecheri, *dubia*, *paula*, *polymena*, L., var. *butleri*, notes on the characters of; RÖBER, CB. Iris, i, pp. 338 & 339.

Argyrocodes minuta, Honduras, DRUCE, p. 240, Ann. N. H. (6) ii, n. sp.

Automolis (Plegapterx?) syntomia, Plötz, redescribed, p. 72, figured, fig. 8; MÖSCHLER, Abh. Senck. Ges. xv.

Syntomis thelebus, F., variation described; LEECH, p. 593, P. Z. S. 1888.

S. minor, India, WARREN, P. Z. S. 1888, p. 294, n. sp.

Copidryas gloveri, habits and metamorphoses; Ins. Life, i, pp. 104-106, figs. 16-20.

Pompostola, cf. *Arctiolar*.

Euchromia gemmata, But., figured, pl. iv, fig. 1, *E. calipennis*, Wlk., = (*Glaucopis pagenstecheri*, Rüb.), p. 111, *arone*, But., figured, pl. iv, fig. 2, *creusa*, L., = (*Glaucopis dubia*, Rüb.), p. 111, *orientalis*, But., figured, fig. 6, *celebensis*, But., = (*G. butleri*, Rüb.), p. 114, *laura*, But., figured, fig. 8; BUTLER, Tr. E. Soc. 1888.

E. lurlina, p. 110, Thursday I., *mathewi*, Solomon Is., p. 111, pl. iv, fig. 3, *fulvida*, p. 112, fig. 5, *splendens*, W. Africa, p. 113, pl. iv, fig. 4, *formosana*, Formosa, p. 114, pl. iv, fig. 7. BUTLER, Tr. E. Soc. 1888, n. spp.

Macrocneme lesione, Panama, DRUCE, p. 239, Ann. N. H. (6) ii, n. sp.

Mastigocera splendens, Bahamas, DRUCE, p. 240, Ann. N. H. (6) ii, n. sp.

Antichloris ruatana, Honduras, DRUCE, p. 241, Ann. N. H. (6) ii, n. sp.

ARCTIIDÆ.

[Cf. ALPHERAKI (3), BUTLER (114, 115), EDWARDS (219), HONRATH (387), LEECH (491), MEYRICK (587), MOORE (612).]

Structure of claws of *Arctiidæ*; SMITH, Ent. Am. iii, p. 199.

Arctiina, characters and classification of; GROTE, Canad. Ent. xx, p. 168.

Cullimorpha, the number of the N. American species; HULST, Ent. Am. iii, p. 218. *C. lecontei*, *confusa*, habits; CAULFIELD, p. 79, Canad. Ent. xx.

Deiopeia pulchella, food-plant; THOMSON, P. Z. S. 1888, p. 121.

Termessa zonophanes, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 921, n. sp.

Euchelia jacobæ, cannibalism; LUCAS, p. cxxxiv, Bull. Soc. Ent. Fr. (6) viii: fungoid disease of; GIARD, C.R. Soc. Biol. (8) v, p. 786.

Pleretes matronula, habits of larva; WEBER, Soc. Ent. iii, p. 109.

P. pactolicus, Centr. Africa, BUTLER, P. Z. S. 1888, p. 82, n. sp.

Pompostola smaragdina, Kilima-njaro, BUTLER, P. Z. S. 1888, p. 97, n. sp.

Nemophila plantaginis, L., n. var. *floccosa*; GRAESER, B. E. Z. xxxii, p. 115.

Arctia caju, aberration; Ent. xxi, p. 73, fig. *A. hebe*, L., var. *sartha*, Stgr., noticed, p. 497, figured, pl. vii, fig. 5, also dark var., p. 498, and figs. 6 & 7; *A. villica*, L., colour monstrosity, p. 498, pl. vii, fig. 8; HONRATH, B. E. Z. xxxii. *A. mendica*, variation; PORRITT, Ent. M. M. xxv, p. 39. *A. brucei*, Edw. (*infra*), notes on the larva of; BRUCE, Ent. Am. iii, p. 219.

A. mongolica, Dschungor, *haberhaueri*, Sarafschan Valley, ALPHERAKI, S. E. Z. xlix, p. 67; *A. brucei*, Colorado, p. 183, *francoia* (n. var.), White Mountains, *remissa*, Hudson's Bay, p. 184, EDWARDS, Ent. Am. iii: n. spp.

Spilosoma glatignyi, Le G., = (*fulvo-hirta*, Meyr.); MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 926. *S. menthustri* and *mendica*, varr. figured, P. S. Lond. E. Soc. 1887, pl. i, figs. 4-14; noticed, pp. 77 & 90. *S. urticae*, var.; BRIGGS, Ent. xxi, p. 97, fig. *S. fuliginosa*, L., malformation of wings; FROMHOLZ, B. E. Z. xxxii, p. 231, pl. ii, fig. 10.

S. bisecta, China and Japan, LEECH, p. 618, pl. xxxi, fig. 3, P. Z. S. 1888, n. sp.

Dionychopus niveus, Mén., variation noticed; LEECH, p. 620, P. Z. S. 1888.

Icambosida dorsalis, India, MOORE, P. Z. S. 1888, p. 394, n. sp.

Cerathosia tricolor, genus and species redescribed; SMITH, P. U. S. Nat. Mus. xi, pp. 189 & 190: its position discussed, referred to *Arctiidæ*; *id.* Canad. Ent. xx, pp. 236-238: note on, suggesting that it is *Noc-tuidæ*; GROTE, Ent. Am. iv, p. 121; also SMITH, *l. c.* p. 122.

Challa quadrimaculata, India, MOORE, P. Z. S. 1888, p. 395, n. sp.

Agrisius japonicus, Japan, p. 598, pl. xxx, fig. 10, LEECH, P. Z. S. 1888, n. sp.

Halesidota tessellata, food-plants of; BEUTENMÜLLER, Ent. Am. iv, p. 76.

- H. significans*, Las Vegas, EDWARDS, Ent. Am. iii, p. 182, n. sp.
Epantheria scribonia, Stoll, n. var. *denudata*; SLOSSON, Ent. Am. ii, p. 212.
Spilarectia dalbergiae, sagittifera, India, MOORE, p. 394, P. Z. S. 1888, n. spp.
Sorocostia (sub *Tribunta*) *biguttalis*, Wlk., = (*trigonota*, MEYR.), p. 222;
S. (sub *Hypena*) *albalis*, Walk., = (*vetustella*, Wlk., Ros.), p. 233; *Tribunta scabralis*, Walk., referred to *Sorocostia*, p. 232; MEYRICK, P. Linn. Soc. N.S.W. (2) ii.
S. hesycha, p. 222, *aenictis, tornotis*, p. 223, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, n. spp.
Symmetrodes sciocosma, n. n. for *S. nitens*, MEYR., nec Wlk.; MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 920.
Tigrioides (sub *Lithosia*) *nana*, Wlk., = (*L. nitens* and *remota*, MEYR.); MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 920.

LITHOSIIDÆ and HYPESIIDÆ.

[Cf. BUTLER (115), DRUCE (205, 206), LEECH (491), MOORE (611, 612), OLLIFF (632), PAGENSTECHER (653), SMITH (851), SNELLEN (855).]

- Nolina*, position of; GROTE, Canad. Ent. xx, p. 167.
Lithosiinae, characters of; GROTE, Canad. Ent. xx, p. 168.
Cydosia, characters of, referred to *Arctiidae*; *C. nobilitella*, Cr., = (*imitella*, Stretch); SMITH, P. U. S. Nat. Mus. xi, pp. 185-188.
Eonistis nigricosta, Japan, pl. xxx, fig. 11, p. 598, LEECH, P. Z. S. 1888, n. sp.

Lithosia japonica, Japan, pl. xxx, fig. 12, *coreana*, Korea, fig. 13, p. 600, LEECH, P. Z. S. 1888, n. spp.

Mitochrista pulchra, mactans, Butl., are sexes of one species, variation noticed; LEECH, p. 601, P. Z. S. 1888.

M. butleri, Japan, LEECH, p. 603, pl. xxx, fig. 14, P. Z. S. 1888, n. sp.

Eugoa? obscura, Japan, LEECH, P. Z. S. 1888, p. 604, pl. xxx, fig. 15, n. sp.

Siccia maculata, Japan, LEECH, p. 605, pl. xxx, fig. 16, P. Z. S. 1888, n. sp.

Nola minutalis, p. 607, pl. xxx, fig. 17, *triangulalis*, fig. 18, p. 608, Japan, LEECH, P. Z. S. 1888, n. spp.

Calligenia melitanda, MEYR., = (*Mitochrista simulans*, Butl.); MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 921.

Lepista limbata, Kilima-njaro, BUTLER, P. Z. S. 1888, p. 98, n. sp.

Pentactrotus vulneratus, Butl., noticed and ♀ described; WARREN, P. Z. S. 1888, p. 295.

Setina calimaria, India, MOORE, P. Z. S. 1888, p. 392, n. sp.

Emene inconstans, India, MOORE, P. Z. S. 1888, p. 393, n. sp.

Roeselia scripta, fraterna, angulata, India, MOORE, p. 393, P. Z. S. 1888;

R. latirittata, p. 286, *inscripta, denticulata, sikkima*, p. 287, India, *id.* Desc. Ind. Lep. : n. spp.

Stigmatophora nicans, Brem., larva described; GRAESER, B. E. Z. xxxii, p. 114.

Alossa nelymma, Moore, = (*Chalcusia palæarctica*, Stgr.) ; GRAESER, B. E. Z. xxxi, p. 115.

Meningocera tricolor, Amboyna, PAGENSTECHER, p. 34, Verz. Lep. Amb., n. sp.

Milionia pryeri, Loo Choo Is., DRUCE, Ent. M. M. xxv, p. 62, n. sp.

Aganaidæ, the subfamily revised, genera tabulated, and the species enumerated, with various notes ; SNELLEN (855).

Aganais borbonica, Bdv., larva and pupa described and figured ; OBERTHÜR, Études d'Ent. xii, p. 20, pl. iv, fig. 7.

Hypsa nesophora, Meyr., larva and pupa noticed, p. 360, figured, pl. xx, figs. 4 & 4a ; OLLIFF, Ann. N. H. (6) i. *H. (Aganopsis) subfuscia*, Walk., figured, pl. i, fig. 1, described, p. 123 ; *H. (Aganais) undulifera*, Walk., fig. 2, *H. celebensis*, Hopff., fig. 3, *strigivenata*, Butl., pl. ii, fig. 1, *intacta*, Walk., figs. 3 & 4, *lanceolata*, Walk., fig. 5, figured, noticed at length, p. 141 ; SNELLEN, Tijdschr. Ent. xxxi.

H. agarista, New Hebrides, &c., p. 129, pl. i, fig. 4, *leuconota*, Java, Sumatra, p. 135, pl. ii, figs. 2 & 2a, SNELLEN, Tijdschr. Ent. xxxi ; *H. woodfordi*, Fiji Is., DRUCE, P. Z. S. 1888, p. 221, pl. xiii, fig. 2 : n. spp.

Cleis nenia, Solomon Is., DRUCE, P. Z. S. 1888, p. 572, pl. xxix, fig. 2, n. sp.

NYCTEOLIDÆ, NYCTEMERIDÆ, CALLIDULIDÆ.

[Cf. DRUCE (206), GRAESER (327), MOORE (611, 612), MÖSCHLER (618).]

Sarothripinae, position of the group ; GROTE, Canad. Ent. xx, p. 167.

Sarothripa, Gn., to be called *Sarotricha*, and referred to *Arctiada*, near *Zia* ; MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 924.

S. æophila, Queensland, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 925, n. sp.

Chionomera triangulifera, *sanguinolenta*, India, MOORE, Desc. Ind. Lep. p. 285, n. spp.

Hylophila kraeffli, Amurland, GRAESER, B. E. Z. xxxii, p. 110, n. sp.

Chandica, n. g. (*Nycteolida*), for *C. quidripennis*, n. sp., Darjiling ; MOORE, Desc. Ind. Lep. p. 286.

Tyana flatoides, India, MOORE, Desc. Ind. Lep. p. 285, n. sp.

Amnemopsyche gracilis, W. Africa, MÖSCHLER, fig. 1 & p. 73, Abh. Senck. Ges. xv, n. sp.

Nycthemera coleta, Cr., scent-organ of ♂ ; HAASF, CB. Iris, i, p. 323. *N. ap'clis*, Walk., figure 1, fig. 4, pl. 178 ; WATERHOUSE, Aid.

N. horites, Solomon Is., DRUCE, P. Z. S. 1888, p. 573, n. sp.

Leptosoma aoluensis, Solomon Is., DRUCE, P. Z. S. 1888, p. 573, n. sp.

Deilemera albipuncta, Solomon Is., DRUCE, P. Z. S. 1888, p. 573, n. sp.

Pterodecta anchora, India, MOORE, P. Z. S. 1888, p. 392, n. sp.

LIPARIDÆ.

[Cf. GRAESER (327), LEECH (491), MABILLE (537), MOORE (612), MÖSCHLER (618), PAGENSTECHER (653), WARREN (910).]

Epicopeia, cf. *Euschemide*, p. 231.

Dasychirinae, characters and composition of; GROTE, *Canad. Ent. u.* p. 169.

Hypochroma nyssiata, Feld., referred to *Liparidae*; MEYRICK, *P. Lin. Soc. N.S.W.* (2) ii, p. 917.

Orgyia antiqua, oviposition and egg, noticed; BLACKBURN, *P. Soc. Manch.* xxvi, p. 53. *O. leucostigma*, eversible glands of larva; RILEY, *P. E. Soc. Wash.* i, p. 87. *O. thyellina*, Butl., ♀ described; LEECH, p. 625, *P. Z. S.* 1888, pl. xxxi, figs. 7 & 7a.

O. zimmermanni, Amurland, GRAESER, *B. E. Z.* xxxii, p. 122, n. sp.

Ocnogya corsica var. *albifascia*; CONSTANT, *Ann. Soc. Ent. Fr.* (6) viii, p. 161, pl. 4, fig. 1.

Parorgyia clintonii, eversible glands of larva; RILEY, *P. E. Soc. Wash.* i, p. 88. *P. leucophaea* and *obliquata*, identity of; *id.* *l. c.*

Aroa sulphurea, Plötz, figured, fig. 10; MÖSCHLER, *Abh. Senck. Ges.* xv. *A. discalis*, Walk, figured, fig. 5, pl. 178; WATERHOUSE, *Aid.*

Artaza guttata, Walk, synonymy discussed; WARREN, *P. Z. S.* 1888, p. 297. *A. intensa*, Butl., variation noticed; LEECH, p. 623, *P. Z. S.* 1888.

A. pulverea, Japan and Korea, LEECH, p. 623, pl. xxxi, fig. 5, *P. Z. S.* 1888; *A. sulphurescens*, India, MOORE, *P. Z. S.* 1888, p. 399 : n. spp.

Charnidas aurantiaca, India, WARREN, *P. Z. S.* 1888, p. 296, n. sp.

Lachana, n. g., p. 397, for *L. ladakensis*, n. sp., India, p. 398; MOORE, *P. Z. S.* 1888.

Procodeca umbrina, India, MOORE, *P. Z. S.* 1888, p. 398, n. sp.

? *Laelia unipunctata, sordida*, W. Africa, MÖSCHLER, p. 74, *Abh. Senck. Ges.* xv, n. spp.

Euproctis aurifrons, W. Africa, MÖSCHLER, p. 75 & fig. 3, *Abh. Senck. Ges.* xv; *E. abdominalis*, India, MOORE, *P. Z. S.* 1888, p. 398 : n. spp.

Charotriche niphonis, Butl., variation described; LEECH, p. 624, *P. Z. S.* 1888.

C. staudingeri, Japan, LEECH, p. 624, pl. xxxi, fig. 6, *P. Z. S.* 1888, n. sp.

Liparis salicis, dispar, and *chrysorrhæa*, habits noticed; OLIVIER, *Rev. Sci. Bourb.* i, p. 210. *L. salicis* attracted in large numbers by electric light; JACOBS, *C.R. ent. Belg.* xxxii, p. lviii : fungoid disease of; GIARD, *C.R. Soc. Biol.* (8) v, p. 787.

Omeria dispar, parthenogenesis of; BOCK (85) : development of parthenogenetic eggs in; PLATNER (677) : profusion of at Algeiras; WALKER, *Ent. M. M.* xxv, p. 65.

O. furca, Japan, LEECH, p. 631, pl. xxxi, fig. 10, *P. Z. S.* 1888, n. sp.

Dasychira platyptera, figured and redescribed; MABILLE, *Miss. Sci. Cap. Horn*, vi, p. 9, pl. i, fig. 5.

D. dallbergii, India, Moore, *P. Z. S.* 1888, p. 399; *D. grossa* (Snell), Amboyua, PAGENSTECHER, p. 37, *Verz. Lep. Amb.* : n. spp.

Eulasychira, n. g., for *E. quinquepunctata*, n. sp., W. Africa, fig. 11; MÖSCHLER, p. 75, *Abh. Senck. Ges.* xv.

Pseudonotodontia, n. g., p. 76, for *P. virescens*, n. sp., W. Africa, fig. 6, p. 77; MÖSCHLER, *Abh. Senck. Ges.* xv.

Lymantria aurora, Butl., pl. xxxi, fig. 9, *dispar*, L., variation in Japan, noticed; LEECH, pp. 629 & 630, *P. Z. S.* 1888.

L. albofascia, Japan, LEECH, p. 629, pl. xxxi, fig. 8, P. Z. S. 1888 ;
L. carnecolor, nigra, India, MOORE, P. Z. S. 1888, p. 399 : n. spp.

Somera cyanea, Japan or Korea, LEECH, p. 642, pl. xxxii, fig. 5, P. Z. S. 1888, n. sp.

Icambosida, cf. *Arctiida*.

PSYCHIDÆ.

[Cf. HEYLAERTS (378), MABILLE (540), MOORE (612), RÜHL (783), WARREN (910).]

Psychinæ characters and composition of, noticed ; GROTE, p. 182, Canad. Ent. xx.

Psyche graslinella, standfussi, cases described ; HOFFMANN, S. E. Z. xlix, pp. 150 & 151. *P. graslinella*, Boisd., habits ; SCHMIDT, Soc. Ent. iii, p. 73. *P. villosella*, Ochs., habits ; *id. t. c.* p. 58.

P. joannisii, Madagascar ; MABILLE, p. lxvii, Bull. Soc. Ent. Fr. (6) viii ; *P. longicauda*, India, WARREN, P. Z. S. 1888, p. 299 : n. spp.

Fumea roboricolella, Bruand, descriptive note ; SPEYER, S. E. Z. xlix, p. 203. *F. betulina*, Z., note on ; RÜHL, Soc. Ent. iii, p. 11. *F. sepium*, larva and habits noticed ; *id. op. cit.* ii, p. 154.

Epichnopteryx pulla, H. S., habits noticed ; RÜHL, Soc. Ent. ii, p. 180.

Eumeta moddermanni, Monrovia, HEYLAERTS, p. lix, C.R. ent. Belg. xxxii, n. sp.

Akesina, n. g., p. 395, for *A. basalis*, n. sp., India, p. 395 ; MOORE, P. Z. S. 1888.

Barandra, n. g., for *B. fumata*, n. sp., India ; MOORE, p. 396, P. Z. S. 1888.

Dasaratha, n. g., p. 396, for *D. himalayana*, n. sp., India, p. 397 ; MOORE, P. Z. S. 1888.

Mahasena hockingii, India, MOORE, P. Z. S. 1888, p. 397, n. sp.

Thyridopteryx ephemeraformis, notes on, coition, &c. ; RILEY, P. Biol. Soc. Washington, ii, pp. 80-83.

NOTODONTIDÆ.

[Cf. DRUCE (206), GRAEF (326), GRAESER (327), LEECH (491), MOORE (612), MÖSCHLER (618), STANDFUSS (864).]

Notodontinæ, characters and components noticed ; GROTE, Canad. Ent. xx, p. 183.

Cerura, formic acid of larva ; POULTON (682). *C. bicuspis*, note on its larva ; KIRBY, Le Nat. (2) ii, p. 274.

C. himalayana, India, MOORE, P. Z. S. 1888, p. 400, n. sp.

Dicranura rinula, larva on tamarisk ; PARTRIDGE, Ent. xxi, p. 157 ; but probably an error, *t. c.* p. 211 : oviposition ; RÜHL, Soc. Ent. iii, p. 21. *D. bicuspis*, characters of larva ; KIRBY, Ent. xxi, p. 275.

Notodonta bombycina, Oberth., queried as *Cnethocampa*, larva and habits noticed ; GRAESER, B. E. Z. xxxii, p. 146. *N. atriplaga*, Stgr., larva noticed ; *id. t. c.* p. 139.

- Spatulia doerriesi*, Amurland, GRAESER, B. E. Z. xxxii, p. 141, n. sp.
Pheosa fasciata, India, MOORE, P. Z. S. 1888, p. 401, n. sp.
Pterostoma grisea, Brem., characters and variation noticed; GRAESER, B. E. Z. xxxii, p. 145.
Lophopteryx carmelita, habits; LAUENROTH, Soc. Ent. iii, p. 9.
L. hoegei, Wladiwostock, GRAESER, B. E. Z. xxxii, p. 143, n. sp.
Drymonia manleyi, p. 639, pl. xxxii, fig. 2, *delia*, fig. 3 & p. 640, Japan, LEECH, P. Z. S. 1888, n. spp.
Stauropus fugi, means of defence of larva; POULTON (683).
S. berberisæ, India, MOORE, P. Z. S. 1888, p. 400, n. sp.
Heterocampa basistriga, India, MOORE, P. Z. S. 1888, p. 400, n. sp.
Schizura ipomeæ, Doub., identified with *Celodasys biguttatus*, PACKARD, Psyche, v, p. 53.
Edma nivilinea, Japan, LEECH, p. 638, pl. xxxii, fig. 1, P. Z. S. 1888, n. sp.
Asteroscopus nuberculosus, habits; RÜHL, Soc. Ent. iii, p. 27.
Gluphisia indica, Walk., cf. *Varmina*, *Lasiocampide*. *G. tearlei*, Edw., cf. *Cymatophorida*.
Phalera bucephala, L., n. var. *infulgens*; GRAESER, B. E. Z. xxxii, p. 146.
P. peruda, Solomon Is., DRUCE, P. Z. S. 1888, p. 574, pl. xxix, fig. 4, n. sp.
Macronadata, n. g., p. 82, for *M. collaris*, n. sp., W. Africa, p. 83, fig. 7; MÖSCHLER, Abh. Senck. Ges. xv.
Clostera alpina, Bell., note on; POULADE, p. xcix, Bull. Soc. Ent. Fr. (6) viii.
Rhegmatoiphila, n. g., for *Clostera alpina*, Bell.; STANFUS, B. E. Z. xxxii, p. 239, pl. iii, figs. 5 & 6.
Hyparpar aurostriata, Texas, GRAEF, Ent. Am. iv, p. 58, n. sp.
Datana dreselii, Edw., preparatory stages; BEUTENMÜLLER, Canad. Ent. xx, p. 57. *D. ministra*, Dr., preparatory stages described; *id. t. c.* p. 16. *D. integerrima* and *angustii*, G. & R., larvæ described; *id. t. c.* pp. 134 & 135.
Rosama cinnamomea, Japan, LEECH, p. 637, pl. xxxi, fig. 7, P. Z. S. 1888, n. sp.
Datanoides approximans, Japan, LEECH, p. 636, pl. xxxii, fig. 4, P. Z. S. 1888, n. sp.
Somera, cf., *Liparide*.

LIMACODIDÆ, DREPANULIDÆ.

- [Cf. DRUCE (205). GRAESER (327). LEECH (491). MOORE (611, 612). MÖSCHLER (618). PAGENSTECHER (653). POULTON (683).]
Cochliina, position and composition noticed; GROTE, p. 181, Canad. Ent. xx: the mode of progression of the larvæ; POULTON (683).
Bireta plumosa, Japan, LEECH, p. 620, pl. xxxi, fig. 4, P. Z. S. 1888, n. sp.
Aphendula fasciata, India, MOORE, P. Z. S. 1888, p. 403, n. sp.
Miresa flavescens, Walk., larva noticed; GRAESER, B. E. Z. xxxii, p. 121.
M. suffusa, *quadrinotata*, India, MOORE, p. 403, P. Z. S. 1888, n. spp.

Empretia stimulea, Clem., food-plants of; BEUTENMÜLLER, Ent. Am. iv, pp. 75 & 85.

Parasa pallida, W. Africa, fig. 2, MÖSCHLER, p. 78, Abb. Senck. Ges. xv; *P. hockingii*, India, MOORE, P. Z. S. 1888, p. 403 : n. spp.

Heterogenea fulgens, Korea, LEECH, p. 609, pl. xxx, fig. 18, P. Z. S. 1888; *H. christophi*, Wladiwostok, GRAESER, B. E. Z. xxxii, p. 119 : n. spp.

Platypteryginae, characters and components noticed; GROTE, p. 184, Canad. Ent. xx.

Argyris, cf. *Geometridæ*.

Drepana crocea, Japan, LEECH, p. 649, pl. xxxii, fig. 7, P. Z. S. 1888; *D. hyalina*, *lilacina*, p. 401, *simillima*, p. 402, India, MOORE, *t. c.*; *D. prunicolor*, Darjiling, *id.* Desc. Ind. Lep. p. 288 : n. spp.

Callitrepana argentifera, Solomon Is., DRUCE, P. Z. S. 1888, p. 574, pl. xxix, fig. 3, n. sp.

Dryopteryx rosea, Wlk., partial preparatory stages of; DYAR, Ent. Am. iv, p. 179.

Cifuna amata, Stgr., ♂ described, *jankowskii*, Oberth., ♀ described; GRAESER, p. 123, B. E. Z. xxxii.

Oreta pulchripes, *calceolaria*, Butl., variation noticed; LEECH, p. 650, P. Z. S. 1888. *O. calceolaria* and *pulchripes*, Butl., are one species, larvæ noticed; GRAESER, B. E. Z. xxxii, p. 136.

O. rubra, Ambuyna, PAGENSTECHER, p. 38, Verz. Lep. Amb., n. sp.

SATURNIIDÆ, ENDROMIDÆ, CERATOCAMPIDÆ.

[Cf. BUTLER (114), EDWARDS (222), LEECH (491), MABILLE (537), MOORE (612), POULTON (683), WRIGHT (940).]

Saturniidæ, definition of the family; SMITH, P. E. Soc. Wash. i, pp. 42 & 45.

Attacine, brief note on; GROTE, p. 221, Canad. Ent. xx.

Samia cynthia, larval stages of; SOULE, Psyche, v, pp. 135 & 136 : mating of in captivity; *id. t. c.* p. 89.

Actias selene, variation described; LEECH, p. 634, P. Z. S. 1888.

Antheræa mylitta, diseases of larva; DUMAINE (213). *A. pernyi*, variation noticed; LEECH, p. 633, P. Z. S. 1888 : structure of silk; BLANC (82).

A. emini, Centr. Africa, BUTLER, P. Z. S. 1888, p. 84; *A. fraterna*, India, MOORE, P. Z. S. 1888, p. 402 : n. sp.

Saturnia royi, ♂ figured; ELWES, Tr. E. Soc. 1888, pl. viii, fig. 2. *S. galbina*, Cl., metamorphoses; EDWARDS, Ent. Am. iv, p. 61. *S. paronia*, cocoon with two openings; WARBURG, Ent. xxi, p. 15.

S. hockingii, India, MOORE, P. Z. S. 1888, p. 402, n. sp.

Hyperchiria pamina, Neum., metamorphoses; EDWARDS, Ent. Am. iv, p. 62. *H. zephyria*, Gr., preparatory stages; SNOW, Tr. Kansas Ac. ix, pp. 61 & 62.

Coloradia pandora, Bl., egg; EDWARDS, Ent. Am. iv, p. 61.

Agria tau, ontogeny of, pp. 555-568. larva figured, with details, pl. xvii; POULTON, Tr. E. Soc. 1888. *A. tau* var. *lugens*, ♂ and ♀ figured;

STANDFUSS, B. E. Z. xxxii, pl. iii, figs. 3 & 4, noticed, p. 238 *japonica*; LEECH, p. 632, P. Z. S. 1888.

Brahma japonica, Butl., variation noticed; LEECH, p. 635 1888.

Hemileucinae, brief note on; GROTE, p. 222, Canad. Ent. xx.

Hemileuca nevadensis, larva described; HULST, Ent. Am. iii.

H. californica, S. California, WRIGHT, Canad. Ent. xx, p. 31.

Cercophana frauenfeldii, Feld., and cocoon described; MABIL Sci. Cap Horn, vi, p. 11.

Rhodia newara, cocoon of, noticed; THOMSON, P. Z. S. 1888, i.

Mira christophi, Stgr., habits of larva; GRAESER, B. E. Z. xxx

Endromis versicolora, habits of larva; WHITE, P. E. Soc. 188

Ceratocampinae, characters and affinities; GROTE, p. 222, Ca xx: note on the group, with special reference to *Citheroni* p. 76, t. c.

Citheronia mexicana, pupa; EDWARDS, Ent. Am. iv, p. 62.

Sphingicampa quadrilineata, pupa; EDWARDS, Ent. Am. iv, p.

LASIOCAMPIDÆ, BOMBYCIDÆ.

[Cf. CHRISTOPH (151), GRAESER (327), MABILLE (539), MOOSCHLER (618), OBERTHUR (629).]

Lachneinae, characters of; GROTE, p. 223, Canad. Ent. xx.

Gastropacha quercus, hermaphrodite; BERTKAU, Verh. Ver. Rh S.B. p. 67.

Clisiocampa fragilis, Stretch, cocoon; EDWARDS, Ent. Am. iv,

Lasiocampa pini, L., malformation of pupa and imago; FR B. E. Z. xxxii, p. 230, pl. ii, figs. 6 & 7.

L. dieckmanni, Amurland, GRAESER, B. E. Z. xxxii, p. 128, n. s.

Crateronyx ballioni, Novo-Rossiisk, CHRISTOPH, p. 310, Hor. Ent. xxii, n. sp.

Pyrosis idiota, Amurland, GRAESER, B. E. Z. xxxii, p. 131, n. s.

Gastrophylaxis, n. g., p. 78, for *G. forficulatus*, n. sp., W. Africa fig. 17; MÖSCHLER, Abh. Senck. Ges. xv.

Opsirrhina metallescens, W. Africa, MÖSCHLER, p. 89, fig. 9, Abh. Ges. xv, n. sp.

Philotherma, n. g., p. 89, for *P. jacchus*, n. sp., W. Africa, p. 8 MÖSCHLER, Abh. Senck. Ges. xv.

Bhacta, n. g. (*Chrysocampa*), p. 103, for *B. ualensis*, n. sp.,

pl. vii, fig. 10, B. E. Z. xxxii. *B. rubi*, L., monstrosity; SPEYER, S. E. Z. xlix, p. 206: habits of larva; FALLOU, Bull. Soc. Ent. Fr. (6) viii, pp. clx-clxii. *B. lanestris*, L., emergence after five years in pupa; SPEYER, S. E. Z. xlix, p. 205. *B. pini*, habits near Berlin; GLEISSNER, Soc. Ent. iii, pp. 90 & 108. *B. populi*, L., in the Arctic regions; SCHØYER, Ent. Tidskr. ix, p. 142. *B. staudingeri*, Baker, figured, pl. v, fig. 16, larva described, p. 29; OBERTHUR, Études d'Ent. xii. *B. rhadama*, cocoon noticed; P. E. Soc. 1888, p. iii. *B. hyadeni*, Mab., figured, and referred to *Saturnia*; MABILLE, Miss. Sci. Cap Horn, vi, p. 10, pl. i, fig. 4.

B. datini, Tunis, MABILLE, p. xlii, Bull. Soc. Ent. Fr. (6) viii; *B. herzi*, Schahrud, CHRISTOPH, p. 310, Hor. Ent. Ross. xxii: n. spp.

Trisula andraeas, Oberth., referred to *Phalera*, larva described; GRAESER, B. E. Z. xxxii, p. 147.

Bombyx mori, silk in the organism; RAULIN & SICARD (714): colouring matter of; BLANC (81): respiration in egg; LUCIANI & PIUTTI (581, 532): rearing of at Lausanne; POULY-STEINLEN, Soc. Ent. ii, pp. 168 & 169.

ZEUZERIDÆ, HEPIALIDÆ.

[Cf. CHRISTOPH (151), EDWARDS (219), GRAESER (327), MABILLE (537), OLLIFF & PRINCE (637), PAGENSTECHER (653).]

Cossine and *Hepialine*, characters of; GROTE, p. 224, Canad. Ent. xx.

Zeuzera mixta, Amboyna, PAGENSTECHER, p. 42, Verz. Lep. Amb., n. sp.

Phragmatæcia pygmæa, Amurland, GRAESER, B. E. Z. xxxii, p. 119, n. sp.

Cossus ligniperda, mode of pupation; MILTON, Ent. xxi, p. 56; IVY, t. c. pp. 110 & 155.

C. hyrcanus, Schahrud, CHRISTOPH, p. 309, Hor. Ent. Ross. xxii; *C. albonubilis*, Wladiwostok, GRAESER, B. E. Z. xxxii, p. 119: n. spp.

Inguromorpha, n. g., near *Cossus*, p. 182, for *I. slosoni*, n. sp., Florida, p. 183; EDWARDS, Ent. Am. iii.

Phassus signifer, Walk., variation noticed; LEECH, p. 646, P. Z. S. 1888. *P. triangularis*, Edw., larva described; SCHAUS, Ent. Am. iv, p. 65.

Pielus imperialis, Blue Mountains, OLLIFF & PRINCE, P. Linn. Soc. N.S.W. (2) ii, p. 1015, pl. xxxix, n. sp.

Hepialus excrecens, Butl., habits; LEECH, p. 645, P. Z. S. 1888. *H. argentimaculatus*, note on: KELLICOTT, Ent. Am. iv, p. 153. *H. fuscus*, figured and redescribed; MABILLE, Miss. Sci. Cap Horn, vi, p. 8, pl. i, fig. 6.

H. schamyl, Caucasus, CHRISTOPH, p. 309, Hor. Ent. Ross. xxii; *H. tegulatus*, rosatus, Amboyna, PAGENSTECHER, p. 43, Verz. Lep. Amb.: n. spp.

CYMATOPHORIDÆ.

[Cf. GRAESER (327), LEECH (491), MOORE (612), WARREN (910).]

Gonophora dieckmanni, Amurland, GRAESER, B. E. Z. xxxii, p. 148, n. sp.

1888. [VOL. XXV.]

E 16

- Thyatira batis* n. var. *cognata*; WARREN, P. Z. S. 1888, p. 293.
T. cognata, India, MOORE, P. Z. S. 1888, p. 406, n. sp.
Cymatophora ypsilon-græcum, Göze, variety described; MEYER, Ent. Tidskr. ix, p. 40. *C. or. duplaris, diluta*, British varieties of; TUTT, Ent. xxi, pp. 46 & 47. *C. or* n. var. *terrosa*; GRAESER, p. 150, B. E. Z. xxxii. *C. tancrei*, Amurland, GRAESER, p. 151, B. E. Z. xxxii; *C. tristis*, p. 653, pl. xxxii, fig. 8, *C. (?) maxima*, fig. 9, p. 653, Japan, LEECH, P. Z. S. 1888: n. spp.
Asphalia ridens, British var.; TUTT, Ent. xxi, p. 47.
A. nigrofascicula, Amurland, GRAESER, B. E. Z. xxxii, p. 152; *A. cinerea*, India, WARREN, P. Z. S. 1888, p. 300: n. spp.
Polyplocia ornata, p. 653, pl. xxxii, fig. 10, with var. *unicolor*, fig. 11, p. 654, Japan, LEECH, P. Z. S. 1888; *P. albidisca* (MOORE, MS.), p. 292, *dubia*, p. 300, India, WARREN, t. c.: n. spp.
Habrosyne fraterna, India, MOORE, P. Z. S. 1888, p. 406, n. sp.
Karana similis, India, MOORE, P. Z. S. 1888, p. 407, n. sp.
Palimpsestis renalis, orbicularis, p. 407, *albidisca*, p. 408, India, MOORE, P. Z. S. 1888, n. spp.
Gluphisia tearlei, Edw., referred to *Bombycia*; EDWARDS, Ent. Am. iv, p. 63.

NOCTUIDÆ.

[*Cf.* ALPHERAKI (3), CALBERLA (124), CHRÉTIEN (148, 150), DRUCE (205, 206, 207), EDWARDS (219), FRENCH (286), GRAESER (327), GROTE (343), HAASE (353), HEYLAERTS (379), JOANNIS (422), MAHILLÉ (537, 539), MEYRICK (581), MOORE (611, 612), MÜSCHLER (618), OBERTHUR (629), PAGENSTECHER (653), POUJADE (680), POULTON (683, SMITH (852), STANDFUSS (863), STAUDINGER (866, 867), TUTT (892, 893), WARREN (910).]

Note on late papers on the *Noctuidæ* referring to classification and nomenclature; GROTE, Canad. Ent. xx, p. 38.

Bryophila temperata, Walk., noticed and referred to *Leucania*, = (*Xylina inceptura* and *deceptura*, Walk.); MEYRICK, Tr. N. Z. Inst. xi, p. 45. *B. muralis, impar, perla*, British varieties of; TUTT, Ent. xxi, pp. 48 & 49. *B. raptricula* n. var. *erecta*; CALBERLA, p. 221, pl. xii, fig. 3, CB. Iris, i.

B. marginolata, Beyrout, JOANNIS, p. 271, pl. vi, fig. 10, Ann. Soc. Ent. Fr. (6) viii; *B. nigritata*, India, WARREN, p. 301, P. Z. S. 1888: n. spp.

Acronycta rumicis n. var. *toranica*; STAUDINGER, S. E. Z. xlix, p. 65. *A. tridens, psi, leporina*, pp. 50-52, *ligustri, rumicis, auricoma, myanthidis, euphorbiae*, pp. 81-86, British varieties of; TUTT, Ent. xxi. *A. leporina*, L., var. ? *leporella*, p. 245, *A. (?) cornelia*, Stgr., descriptive note, p. 246; STAUDINGER, S. E. Z. xlix.

A. fisseni, p. 311, *calocaloida*, p. 313, Amurland, GRAESER, B. E. Z. xxxii; *A. asiatica*, Mou-Pin, POUJADE, p. xx, Bull. Soc. Ent. Fr. viii; *A. nigrostriata*, Amboyna, PAGENSTECHER, p. 44, Verz. Lep. Amb.: n. spp.

Diphthera honrathi, Amurland, GRAESER, B. E. Z. xxxii, p. 315; *D. fasciata*, India, MOORE, P. Z. S. 1888, p. 408 : n. spp.

Moma orion n. var. *murrhina*; GRAESER, B. E. Z. xxxii, p. 314.

Apatela populi, Riley, n. var. *sancti*, White Mountains; EDWARDS, Ent. Am. iii, p. 185. *A. americana*, food-plants of; BEUTENMÜLLER, op. cit. iv, pp. 75 & 85.

Triena denticulata, India, MOORE, P. Z. S. 1888, p. 408, n. sp.

Hyboma divisa, India, MOORE, P. Z. S. 1888, p. 409, n. sp.

Simyra splendida, Wladiwostok, STAUDINGER, S. E. Z. xlix, p. 245, n. sp.

Arasilonche albovenosa, British var.; TUTT, Ent. xxi, p. 99.

Mythimna (?) *imbellis*, Central Asia, STAUDINGER, S. E. Z. xlix, p. 28, n. sp.

Aletia xyliana, Say, in Canada; BETHUNE, Rep. E. Soc. Ont. xviii, pp. 17, 18, & 33.

A. fraterna, *exanthemata*, p. 410, *rudis*, p. 411, India, MOORE, P. Z. S. 1888, n. spp.

Leucania (sub *Mamestra*) *griseipennis*, Feld., = (*Chera virescens*, Butl., *Splælotis inconstans*, Butl., and *L. moderata*, Meyr., nec Walk.); MEYRICK, Tr. N. Z. Inst. xx, p. 44. *L. unipunctata*, Haw., = (*extranea*, Gn.); TUTT, Ent. M. M. xxv, p. 56. *L. l-album*, Gmel., = (*bistrigata* and *penicillata*, Moore); WARREN, P. Z. S. 1888, p. 301. *L. conigera*, p. 101, *turca*, *lithargyria*, *unipunctata*, pp. 135-139, *impudens*, p. 152, *comma*, p. 154, *straminea*, p. 176, *impura*, p. 178, *pallens*, p. 179, British varieties of; TUTT, Ent. xxi. *L. turca*, larva described; PORRITT, Ent. M. M. xxiv, p. 248.

L. semicircula, Amurland, GRAESER, B. E. Z. xxxii, p. 349; *L. irrorata*, p. 409, *percisca*, *bifasciata*, p. 410, India, MOORE, P. Z. S. 1888 : n. spp.

Tympanistes rubidorsalis, India, MOORE, P. Z. S. 1888, p. 409, n. sp.

Sesamia cretica, Led., var. (aberr. ?) *striata*; STAUDINGER, S. E. Z. xlix, p. 27.

Senta maritima, British varieties; TUTT, Ent. xxi, p. 206.

S. nigrosignata, Wladiwostok, GRAESER, B. E. Z. xxxii, p. 344, n. sp.

Cenobia rufa, Haw., = (*despecta*, Treit.); TUTT, Ent. M. M. xxv, p. 55 : British variety; *id.* Ent. xxi, p. 208.

Tapinostola fulva, British varieties; TUTT, Ent. xxi, p. 221.

T. lagunica, Amurland, GRAESER, B. E. Z. xxxii, p. 344, n. sp.

Calamia lutosa, *phragmatidis*, British varieties; TUTT, Ent. xxi, pp. 252-254.

Argyrospila formosa, Amurland, GRAESER, B. E. Z. xxxii, p. 345, n. sp.

Nonagria neurica, Hb., *arundineta*, Schmidt, *dissoluta*, Tr., synonymy of; TUTT, S. E. Z. xlix, p. 239. *N. extrema*, Hb., is distinct from *concolor*, Gn., the latter is a var. of *fulva*, Hb.; *id.* Ent. M. M. xxv, p. 55. *N. neurica*, *geminipunctata*, *sparganii*, *arundinis*, British varieties; *id.* Ent. xxi, pp. 224-229.

N. ? amæna, Amurland, STAUDINGER, S. E. Z. xlix, p. 254; *N. graminea*, Amurland, GRAESER, B. E. Z. xxxii, p. 343 : n. spp.

Gortyna ochracea, British varieties; TUTT, Ent. xxi, p. 269.

- G. basalipunctata*, Amurland, GRAESER, B. E. Z. xxxii, p. 341, n. sp.
Hydræcia micacea, *nititans*, British varieties; TUTT, Ent. xxi, pp. 335-313, pl. i.
Arzama obliquata, (G. & R., metamorphoses; BREHME, pp. 119, 139, & 180, Canad. Ent. xx : again noticed; MOFFAT, t. c. p. 238.
Xylophasia indica, Walk., referred to *Rhizogramma*; WARREN, P. Z. S. 1888, p. 302.
Xylomiges stetcheri, Vancouver, GROTE, p. 137, Canad. Ent. xx, n. sp.
Aporophyla lutulenta n. var. *pallida*; CALBERLA, CB. Iris, i, p. 237.
Arylia triseriata, India, MOORE, P. Z. S. 1888, p. 409, n. sp.
Oncocnemis fasciatus, *tenuifascia*, p. 18, *iricolor*, *terminalis*, p. 19, *simplex*, p. 20, N. America, SMITH, Ins. Life, i, n. spp.
Episema glaucina n. var. *meridionalis*; CALBERLA, p. 235, CB. Iris, i.
E. (?) rulpina, Central Asia, STAUDINGER, S. E. Z. xlix, p. 18, n. sp.
Heliophobus scillar, Algeria, CHRÉTIEN, Le Nat. (2) ii, p. 92, n. sp.
Oxira ochracea, Walk., redescribed, position discussed; WARREN, p. 306. P. Z. S. 1888.
Margelana, n. g. (next *Heliophobus*), for *M. versicolor*, n. sp., Central Asia; STAUDINGER, S. E. Z. xlix, p. 20.
Phoebeophilus, n. g., for *P. amœnus*, n. sp., Central Asia; STAUDINGER, S. E. Z. xlix, p. 21.
Isoclora viridis n. var. *marina*; STAUDINGER, S. E. Z. xlix, p. 24.
Eicomorpha, n. g., near *Luperina*, for *E. antiqua*, n. sp., Central Asia; STAUDINGER, S. E. Z. xlix, p. 24.
Diantheecia albimacula, note on habits; HUBER, Soc. Ent. ii, p. 187.
Mamestra (sub *Euplexia*) *insignis*, Walk. = (*polychroa*, Meyr.); *M.* (sub *Apamea*) *ritiosa*, Butl. = (*oethistis*, Meyr.); *M.* (sub *Orthosia*) *infensa*, Walk. = (*arachnias*, Meyr.); MEYRICK, Tr. N. Z. Inst. xx, p. 45. *M. brassicae* n. var. *scotochroma*; RÖBER, CB. Iris, i, p. 340, pl. xii, fig. 13. *M. immunda* n. var. *roseonitens*, Ob., figured, pl. v, fig. 20; OBERTHUR, Études d'Ent. xii. *M. advena*, Fab., var. *adjuncta*; STAUDINGER, S. E. Z. xlix, p. 249.
M. mortua, p. 249, *declinans*. *M. (?) incommoda*, p. 250, E. Amurland. STAUDINGER, S. E. Z. xlix; *M. borina*, p. 14, *armata*, p. 15, *peculiaris*, p. 16, *vidua*, p. 17, Central Asia, *id. t. c*; *M. tetrica*, Amurland, GRAESER, B. E. Z. xxxii, p. 325; *M. nigerrima*, India, WARREN, P. Z. S. 1888, p. 302; *M. proteastis* = (*ritiosa*, Meyr., nec Butl.), p. 45, *phricias* = (*temperata*, Meyr., nec Walk.), p. 46, New Zealand, MEYRICK, Tr. N. Z. Inst. xx : n. spp.
Miama strigilis, melanic form noticed; Ent. xxi, pp. 60, 93, 111, & 112.
Grammesia bifasciata, Snýfen, STAUDINGER, S. E. Z. xlix, p. 254, n. sp.
Acosmetia lugubris, Amurland, GRAESER, B. E. Z. xxxii, p. 351, n. sp.
Caradrina alsinus n. var. *levis*; STAUDINGER, S. E. Z. xlix, p. 29. *C. lenta*, Tr., var. *lentina*; *id. t. c*, p. 255.
C. mawrella, p. 255, *C. (Hydrilla) funesta*, *illustrata*, p. 256, Amurland, STAUDINGER, S. E. Z. xlix; *C. farinacea*, India, MOORE, P. Z. S. 1888, p. 411 : n. spp.
Pyrophila pyramidoides, Gn., food-plants of; BEUTENMÜLLER, Ent. Am. iv, p. 77.

Agrotis moderata, Walk., transferred to *Leucania*, synonymy noticed; MEYRICK, Tr. N. Z. Inst. xx, p. 45. *A. sericea*, Butl., = (*inconspicua*, Butl.) ; *id. t. c.* p. 46. *A. typhlina*, fig. 5, *frigida*, fig. 2, *gravidata*, fig. 4, *carbonifera*, fig. 3, *bicolor*, fig. 1, figured, pl. ii, and redescribed, pp. 12-18; MABILLE, Miss. Sci. Cap Horn. *A. senecens* n. var. *senilis*; STAUDINGER, S. E. Z. xlix, p. 1. *A. exusta*, Butl., ab. *nigromaculata*, p. 320, *pecta*, L., var. *glaucomaculata*, p. 321, *præcox*, L., var. *flavomaculata*, p. 323; GRAESER, B. E. Z. xxxii. *A. baja*, Fab., variety described; MEVES, Ent. Tidsskr. ix, p. 40. *A. cursoria*, variations of; BARRETT, Ent. M. M. xxv, p. 138. *A. ranthographa* ab. *cohesa*, H.-S., fig. 12, *cinerea* n. var. *alpigena* (p. 226), figs. 7 & 8, *trax*, Hb., fig. 10, figured; CALBERLA, CB. Iris, i, pl. xii. *A. tritici*, *cursoria*, *aquilina*, *obelisca*, variation discussed; TUTT, Ent. xxi, pp. 171-176 & 198-202. *A. culminicola*, Stgr., ♂ organs, pl. xi, fig. 1, characters of, p. 211, pl. x, figs. 1 & 2, *lucerna*, L., ♂ character, pl. xi, fig. 2, *vallesiaca*, B., fig. 10, pl. x, *squalorum*, Ev., characters, p. 218, pl. x, fig. 9, *nyctemera*, Bdv., ♀ figured, pl. x, fig. 6, ♂ characters, pl. xi, fig. 4; STANDFUSS, CB. Iris, i. *A. hospitalis*, Gr., note on its characters; GROTE, p. 129, Canad. Ent. xx. *A. segetum*, fungoid disease of; GIARD, Bull. Sci. Nord. (3) i, p. 303.

A. viskotti, Switzerland, p. 212, pl. x, figs. 3 & 4, ♂ organs, pl. xi, fig. 2, *turatii*, S. France, p. 216, pl. x, fig. 5, *eremicola*, Kirghis Steppes, p. 217, pl. x, figs. 8 & 9, STANDFUSS, CB. Iris; *A. sabura*, *rugifrons*, Tunis, MABILLE, p. xlii, Bull. Soc. Ent. Fr. (6) viii; *A. ledereri*, p. 2, *violetta*, p. 3, *clara*, p. 4, *alaina*, p. 5, *nyctemera*, *electra*, p. 6, *subdecora*, *ignobilis*, p. 7, *improba*, p. 8, *exacta*, p. 9, *turbans*, p. 10, *incognita*, p. 11, *furinosa*, p. 12, *subconspicua*, p. 13, *lasciva*, p. 14, Central Asia, STAUDINGER, S. E. Z. xlix; *A. dewitzi*, p. 316, *bipartita*, p. 318, Amurland, GRAESER, B. E. Z. xxxii; *A. puchnobides*, p. 246, *relata*, *militaris*, p. 247, *nigricostata*, *præcurrens*, p. 248, East Amurland, STAUDINGER, S. E. Z. xlix; *A. pæcila*, Mongolia?, ALPHERAKI, t. c. p. 67; *A. agilis*, Vancouver, GROTE, p. 128, Canad. Ent. xx : n. spp.

Ochropleura denticulata, India, WARREN, P. Z. S. 1888, p. 307, n. sp.

Namangana, n. g., near *Segetia*, for *N. cretacea*, n. sp., Central Asia; STAUDINGER, S. E. Z. xlix, p. 28.

Teniocampa incerta n. var. *pallida* and *T. gracilis* n. var. *pallidior*; STAUDINGER, S. E. Z. xlix, p. 32. *T. gracilis*, habits noticed; LINDNER, Soc. Ent. ii, p. 155.

Pachnobia varicollis, Del., figured, pl. vii, figs. 53 & 53a; OBERTHUR, Études d'Ent. xii.

Orrhoia ligula n. varr. *politina* and *subspadiceana*; STAUDINGER, S. E. Z. xlix, p. 35.

O. canicostata, Amurland, GRAESER, B. E. Z. xxxii, p. 358, n. sp.

Orthosia mollis, figured and redescribed; MABILLE, Miss. Sci. Cap Horn, vi, p. 18, pl. i, fig. 7. *O. pistacina* ab. *cærulescens*; CALBERLA, CB. Iris, i, p. 254. *O. externa*, Walk., referred to *Curadrina* and redescribed; WARREN, P. Z. S. 1888, p. 303.

O. hamifera, California, GROTE, p. 130, Canad. Ent. xx, n. sp.

Scopelosoma moffattiana, Gr., life history; PEARSALL, Ent. Am. iv, p. 59.

Xanthia (sub *Graphiphora*) *purpurea*, Butl. = (*ceramodes*, Meyr.); MEYRICK, Tr. N. Z. Inst. xx, p. 46.

X. coriacea, Wladiwostok, GRAESER, B. E. Z. xxxii, p. 357, n. sp.

Calymnia campostigma, Mén., larva described; GRAESER, p. 356. B. E. Z. xxxii. *C. trapezina*, L., malformation of wings; FROMHOLD, B. E. Z. xxxii, p. 227, pl. ii, fig. 1.

C. grandifica, Amurland, GRAESER, B. E. Z. xxxii, p. 356; *C. moderata picta*, Amurland, STAUDINGER, S. E. Z. xlix, p. 257 : n. spp.

Cosmia subtilis, Central Asia, STAUDINGER, S. E. Z. xlix, p. 33; *C. (?) foveata*, Amboyna, PAGENSTECHER, p. 46, Verz. Lep. Amb. : n. spp.

Dyschorista plebeia, Central Asia, STAUDINGER, S. E. Z. xlix, p. 34, n. sp.

Polia centralasiae n. var. ? *extrita*; STAUDINGER, S. E. Z. xlix, p. 22. *P. chi*, L., n. var. *subcaerulea*; GRAESER, B. E. Z. xxxii, p. 329.

Miselia tuncrei, Amurland, GRAESER, B. E. Z. xxxii, p. 329, n. sp.

Valeria oleagina, oviposition; LOCKE, Soc. Ent. iii, p. 12.

Euplexia illustrata, Amurland, GRAESER, B. E. Z. xxxii, p. 339; *E. pectinata*, India, WARREN, P. Z. S. 1888, p. 308 : n. spp.

Hadena tetragona, figured and redescribed; MABILLE, Miss. Sci. Cap Horn, vi, p. 19, pl. i, fig. 8. *H. zeta* n. var. *curvi*, p. 241, pl. xii, figs. 1 & 2. *calberlai*, Stgr., fig. 9, figured; CALBERLA, CB. Iris, i. *H. gemmea*, halio and larva noticed; WERNER, Ent. Nachr. xiv, pp. 257-259. *H. turbulenta*, Hb., larva described; BEUTENMÜLLER, p. 136, Canad. Ent. xx.

H. inquinata, Tunis, MABILLE, p. xliii, Bull. Soc. Ent. Fr. (6) viii; *H. christophi*, Taganrog, STAUDINGER, S. E. Z. xlix, p. 68; *H. timida*, Central Asia, *id.* t. c. p. 26; *H. viridimacula*, p. 331, *hedeni*, p. 333, *cinefacta*, p. 334, Amurland, GRAESER, B. E. Z. xxxii; *H. arctides*, = (*arcta*, Oberth., nec Led.), p. 251, *christophi*, *fraudulenta*, p. 252, Amurland, STAUDINGER, S. E. Z. xlix; *H. evelina*, California, FRENCH, p. 71, Canad. Ent. xx : n. spp.

Rhizogramma inextricata, Moore, systematic position queried; WARREN, P. Z. S. 1888, p. 301.

Lithocampa ramosula, Amurland, STAUDINGER, S. E. Z. xlix, p. 218, n. sp.

Xylina ingrlica, H.-S., larva and pupa described; HIENDELMAYR, Wien. ent. Z. vii, p. 229 : n. var. *grisea*; GRAESER, p. 360, B. E. Z. xxxii.

Calocampa exoleta, n. var. *impudica*, STAUDINGER, S. E. Z. xlix, p. 31.

Scotocampa, n. g., for *S. indigesta*, n. sp., Central Asia, and to include *Scotochrosta distincta* and *fissilis*, Chr.; STAUDINGER, S. E. Z. xlix, p. 36.

Leiomctopon, n. g., for *L. simyrides*, n. sp., Central Asia; STAUDINGER, S. E. Z. xlix, p. 37.

Cucullia syrtana, Tunis, MABILLE, p. li, Bull. Soc. Ent. Fr. (6) viii; *C. maculosa*, Ussuri, STAUDINGER, S. E. Z. xlix, p. 259; *C. maracandica*, Central Asia, *id.* t. c. p. 39; *C. hartmanni*, Texas, FRENCH, p. 69, Canad. Ent. xx : n. spp.

Cleophana omar, Ob., figured, pl. v, fig. 15; OBERTHUR, Études d'Ent. xii.

- C. serratula*, Central Asia, STAUDINGER, S. E. Z. xlix, p. 38, n. sp.
Epimecia quadrivirgula, subtilis, Tunis, MABILLE, p. li, Bull. Soc. Ent. Fr. (6) viii, n. spp.
Calophasia anatolica, Led., figured, pl. xii. fig. 11, described, p. 256; CALBERLA, CB. Iris, i.
Pradatta bimaculata, India, MOORE, P. Z. S. 1888, p. 411, n. sp.
Musalia tosta, India, MOORE, P. Z. S. 1888, p. 411, n. sp.
Hypsophila, n. g., p. 40, for *Heliothis jugorum*, Ersch. (with n. varr. *huberhaueri* and *pamira*, pp. 41 & 42); STAUDINGER, S. E. Z. xlix.
Heliothis foreolatus, Amurland, STAUDINGER, S. E. Z. xlix, p. 263; *H. olivaria*, Amurland, GRAESER, B. E. Z. xxxii, p. 365; *H. albistriata*, Amboyna, PAGENSTECHEK, p. 48, Verz. Lep. Amb. : n. spp.
Schinia marginata, abdominal brush of; SMITH, P. E. Soc. Wash. i, p. 55.
Anarta trisema, figured and redescribed; MABILLE, Miss. Sci. Cap Horn, vi, p. 20, pl. i, fig. 9.
A. fumila, Amurland, GRAESER, p. 365, B. E. Z. xxxii, n. sp.
Janthinea (*Stemmaphora*, n. g.?) *viola*, Central Asia, STAUDINGER, S. E. Z. xlix, p. 43, n. sp.
Chariclea suavis, Central Asia, STAUDINGER, S. E. Z. xlix, p. 44, n. sp.
Gyrohypnoma, n. g., near *Metoponia*, for *G. sterrha*, n. sp., Central Asia, STAUDINGER, S. E. Z. xlix, p. 47.
Cunna splendens, India, MOORE, P. Z. S. 1888, p. 412, n. sp.
Acontia luctuosa, and other species, larvæ described; CHRÉTIEN (148).
A. biskrensis, Ob., figured, pl. v, fig. 17; OBERTHUR, Études d'Ent. xii.
A. delecta, Walk., biography; WEEKS, Ent. Am. iv, p. 46.
Erastria bicyclica, Central Asia, STAUDINGER, S. E. Z. xlix, p. 46; *E. distinguenda*, numism., p. 265, *wiskotti*, p. 266, Amurland, *id. t. c.*; *E. mollicula*, Amurland, GRAESER, B. E. Z. xxxii, p. 368; *E. albofusca*, Amboyna, PAGENSTECHEK, p. 49, Verz. Lep. Amb. : n. spp.
Leocyna cilia, p. 263, *borussica*, p. 264, Amurland, STAUDINGER, S. E. Z. xlix, n. spp.
Thalpochares respersa var. *bythinica*; BAKER, Tr. E. Soc. 1888, p. 121.
T. communimacula, note on; SPEYER, S. E. Z. xlix, p. 208.
T. viridis, Central Asia, STAUDINGER, S. E. Z. xlix, p. 45; *T. bella*, Wladiwostok, *id. t. c.* p. 264; *T. triangularis*, India, WARREN, P. Z. S. 1888, p. 309 : n. spp.
Metachrostis contingens, India, MOORE, P. Z. S. 1888, p. 412, n. sp.
Hypenodes, n. sp., cf. *Deltoidæ*.
Plusia italica, Stg., figured, pl. xii, figs. 4 & 5, synonymy, &c., discussed, p. 258; CALBERLA, CB. Iris, i. *P. gamma*, fungoid disease of; GIARD, C.R. Soc. Biol. (8) v, p. 786.
P. aurata, p. 260, *adscripta*, p. 261, *intractata*, p. 262, Amurland, STAUDINGER, S. E. Z. xlix; *P. litterata*, Amboyna, PAGENSTECHEK, p. 53, Verz. Lep. Amb. : n. spp.
Telesilla ? *placens*, Amurland, STAUDINGER, S. E. Z. xlix, p. 259, n. sp.
Eriopus venus, Amurland, STAUDINGER, S. E. Z. xlix, p. 253; *E. albo-lineola*, Amurland, GRAESER, B. E. Z. xxxii, p. 337 : n. spp.

Thyridiphora, n. g. (*Thyrididae*), p. 310, for *T. fenestrata*, n. sp., *Ibid.*, p. 311; WARREN, P. Z. S. 1888.

Plusiodonta compressipalpis, Gn., larva described; GRAESER, p. 301, B. E. Z. xxxii.

Phycodes, systematic position noticed; WARREN, P. Z. S. 1888, p. 238.

Eriocera cluysenaeri, Sumatra, HEYLAERTS, p. lxi, C.R. ent. Belg. xxxii, n. sp.

Gonitis albitarsata, Amboyna, PAGENSTECHER, p. 55, Verz. Lep. Amb., n. sp.

Amphipyra tragopoginis n. var. *turcomana*; STAUDINGER, S. E. Z. xlix, p. 32. *A. cinnamomea*, habits of; CASPARI, Soc. Ent. iii, p. 2. *A. pyramidea* n. var. *obliquilimbata*; GRAESER, B. E. Z. xxxii, p. 352.

A. flavicaudata, India, WARREN, P. Z. S. 1888, p. 312, n. sp.

Acosmetia (?) *Amphipyra* (?) *alpherakii*, Central Asia, with var. *serpa*, p. 31, STAUDINGER, S. E. Z. xlix, p. 30, n. sp.

Pandesma benenotata, E. India, WARREN, P. Z. S. 1888, p. 313, n. sp.

Metopourhis, n. g., for *Photedes*? *albirena*, Christoph; STAUDINGER, S. E. Z. xlix, p. 54.

Spintherops ersiccata, Led., figured, pl. xii, fig. 6, recorded as European, p. 268; CALBERLA, CB. Iris, i. *S. cataphanes*, Hb., n. varr. *subligaminosa*, *præligaminosa*, *maculifera*, p. 60; *S. delucida* n. varr. *asiatica*, *rossi*, p. 63; STAUDINGER, S. E. Z. xlix.

S. (?) *simplex*, Central Asia, STAUDINGER, S. E. Z. xlix, p. 64, n. sp.

Toxocampa lunifera, Solomon Is., DRUCE, P. Z. S. 1888, p. 575, n. sp.

Plecoptera reflexa, Gn., scent-organ of ♂; HAASE, CB. Iris, i, p. 324.

Polydesma, scent-organ of ♂; HAASE, CB. Iris, i, p. 324.

Briarda conturbata, Walk., figured, fig. 3, pl. 178; WATERHOUSE, Aid.

Synitha fasciosa, sinuosa, lilacina, Darjiling, p. 289, MOORE, Desc. Ind. Lep., n. spp.

Selepa robusta, anescens, Darjiling, MOORE, Des. Ind. Lep. p. 288, n. spp.

Ercheia zygia, fig. 3, zura, Swinh., fig. 4, figured, pl. 177; WATERHOUSE, Aid.

Cocytodes cærulea, Gn., scent-organ of ♂; HAASE, CB. Iris, i, p. 324.

Gyrtona pusilla, Calcutta, MOORE, Desc. Ind. Lep. p. 289, n. sp.

Steiria variabilis, Moore, variation noticed, p. 223, figured, pl. xliii, figs. 3 & 4; DRUCE, P. Z. S. 1888.

Bolina fascicularis and *B. cunearis*, Gn.; MÖSCHLER, Ent. Am. iii, pp. 197 & 198, and BUTLER, op. cit. iv, p. 13. *Bolina*, Dup., and *Melipotis*, use of the names; *B. nigrescens*, G. & R., = (*ochreipennis*, HARV.); GROTE, p. 139, Canad. Ent. xx. *B.* (sub *Catocala*) *amata*, larva noticed; GRAESER, B. E. Z. xxxii, p. 370.

Leucanitis hedemanni, Amurland, China, STAUDINGER, S. E. Z. xlix, p. 267; *L. aberrans*, p. 49, *sesquilina*, p. 51, Central Asia, *id. t. c.*; n. spp.

Namangana, n. g., near *Armada*, for *N. mirabilis*, n. sp., Central Asia; STAUDINGER, S. E. Z. xlix, p. 52.

Hypocala pierreti, Gn., structure of tibia in ♂; HAASE, CB. Iris, i, p. 324.

Catocala armandi, n. n. for *C. daridi*, Pouj., nec Obert.; POUJADE,

p. cecvii, Bull. Soc. Ent. Fr. (6) viii. *C. nupta*, var. with black underwings; LAVER, Ess. Nat. ii, p. 255. *C. desperata*, Gn., preparatory stages of; FRENCH, Canad. Ent. xx, pp. 28-31. *C. relicta*, Walk., preparatory stages of; CLARK, t. c. pp. 17-20. *C. innubens*, Gn., metamorphoses; FRENCH, t. c. pp. 170-172. *C. palaogama*, Gn., metamorphoses; *id.* t. c. pp. 108-111.

C. repudiata, p. 55, *neglecta*, p. 56, *optima*, p. 57, *desiderata*, p. 59, Central Asia, STAUDINGER, S. E. Z. xlix; *C. agitatrix*, p. 372, *nutrix*, p. 374, *honrathi*, p. 376, Amurland, GRAESER, B. E. Z. xxxii; *C. serenides*, p. 268, *greyi*, p. 270, *doerriesi*, p. 271, *streckeri*, p. 272, Amurland, STAUDINGER, S. E. Z. xlix; *C. persimilis*, *patala* (Feld., Reise Nov. pl. cxii, fig. 23), India, WARREN, p. 314, P. Z. S. 1888: n. spp.

Ophideres princeps, Gn., = (*divitiosa*, Wlk., and *banakus*, Plötz.); MÖSCHLER, Abh. Senck. Ges. xv, p. 83.

Phyllodes imperialis, Solomon Is., DRUCE, p. 241, Ann. N. H. (6) ii, n. sp.

Syma picta, *fumosa*, and *achalina*, Butl., are one species, larva noticed; GRAESER, B. E. Z. xxxii, p. 369.

S. rectifasciata, Amurland, GRAESER, B. E. Z. xxxii, p. 370, n. sp.

Erebus odora, L., early stages of; FERNALD, Ent. Am. iv, p. 36.

Argiva, Hb., scent-organ in; HAASE, CB. Iris, i, p. 325: stridulating organ of; *id.* t. c. p. 337.

O. purpurata, Solomon Is., DRUCE, P. Z. S. 1888, p. 575, n. sp.

Spiredonia pluto, structure of middle tibia; HAASE, CB. Iris, i, p. 325.

Entomogramma fuitrix, Gn., structure of tibia in ♂; HAASE, CB. Iris, i, p. 325.

Hulodes cinereomarginata, Amboyna, PAGENSTECHER, p. 62, Verz. Lep. Amb., n. sp.

Lycoselene, n. g., of doubtful position, p. 87, for *L. lunata*, n. sp., W. Africa, p. 88, fig. 19; MÖSCHLER, Abh. Senck. Ges. xv.

Anabathra, n. g., near *Pseudophia*, for *A. una*, n. sp., W. Africa, fig. 22; MÖSCHLER, p. 89, Abh. Senck. Ges. xv.

Ophyz bipartita, Gn., scent-organ of ♂; HAASE, CB. Iris, i, p. 326.

Dysgonia latifascia, India, WARREN, P. Z. S. 1888, p. 315, n. sp.

Ophisma pudica, p. 85, fig. 12, *opulenta*, p. 86, fig. 15, W. Africa, MÖSCHLER, Abh. Senck. Ges. xv, n. spp.

Achæa melicerte, Dr., ravages of, description of larva; WOOD-MASON (937).

Serrodus campana, Gn., scent-organ of; HAASE, CB. Iris, i, p. 326.

Athyma (but written *Athyma*) *tripunctata*, Amboyna, PAGENSTECHER, p. 65, Verz. Lep. Amb., n. sp.

Grammodes alcyona, Fiji Is., DRUCE, P. Z. S. 1888, p. 225, pl. xiii, fig. 5, n. sp.

Euclidia mi, larva described; PORRITT, Ent. M. M. xxv, pp. 13-15: geometriform structure and attitudes of the larva; POULTON (683).

E. regia, Central Asia, STAUDINGER, S. E. Z. xlix, p. 48, n. sp.

Arasada fuscosa, pl. viii, fig. 21, *fraterculata*, *ruptifascia*, p. 290, India, MOORE, Desc. Ind. Lep., n. spp.

Amyna (sub *Poupbila*) *stricta*, Walk., distribution discussed, =

(*stigmatula*, Snell., *stellata*, and *undulifera*, Butl.); WARREN, P. Z. S. 1888, p. 303.

Phurys vinculum, Gn., = (*Celiptera bifasciata*, Bates); BATES, *Canad. Ent. xx*, p. 100.

Remigia congregata, Walk., figured, fig. ii, pl. 178; WATERHOUSE, *Am. Zethes laudatus*, p. 68, *bilineatus*, p. 69, *variabilis*, p. 70, Amboyna, PAGENSTECHER, *Verz. Lep. Amb.*, n. spp.

Megacephalon pilosum, Amboyna, PAGENSTECHER, p. 72, *Verz. Lep. Amb.*; *M. fenestratum*, W. Africa, MÖSCHLER, p. 84, *Abh. Senck. Ges. xv*: n. spp.

DELTOIDE.

[*Cf.* BUTLER (116), CALBERLA (124), GRAESER (327), MOORE (611), MÖSCHLER (618), PAGENSTECHER (653), STAUDINGER (866), WARREN (910).]

Hypena passerinalis, Amurland, GRAESER, B. E. Z. xxxii, p. 383; *H. conspersalis*, Amurland, STAUDINGER, S. E. Z. xlix, p. 282; *H. angustalis*, India, WARREN, P. Z. S. 1888, p. 317: n. spp.

Bomolocha bicoloralis, Amurland, GRAESER, B. E. Z. xxxii, p. 381, n. sp.

Hypenodes exsularis, N. Zealand and China, MEYRICK, p. 46, *Tr. N. Z. Inst. xx*, n. sp.

Ricula trilineata, India, MOORE, *Desc. Ind. Lep.* p. 291, n. sp.

Aburina, n. g., p. 90, for *A. sobrina*, n. sp., W. Africa, p. 91, fig. 13: MÖSCHLER, *Abh. Senck. Ges. xv*.

Madopa rectilinealis, Amurland, GRAESER, B. E. Z. xxxii, p. 380, n. sp.

Hermينيا tarsipennalis, scent-organ of ♂; MELDOLA, *Ess. Nat. ii*, p. 113.

Eudragana, n. g. (*Hermينيا*), for *E. limbata*, n. sp., Christmas I.: BUTLER, P. Z. S. 1888, p. 545.

Nodaria? *amurensis*, Amurland, STAUDINGER, S. E. Z. xlix, p. 274, n. sp.

Zanclognathus assimilis, Z.? *robiginosa*, p. 275, *bistrigata*, p. 276, Amurland, STAUDINGER, S. E. Z. xlix; *Z. ciliata*, Amboyna, PAGENSTECHER, p. 76, *Verz. Lep. Amb.*: n. spp.

Pangrapta marmorata, p. 277, *incisa*, p. 278, *flavomaculata*, p. 279, *snareola*, p. 281, *costamaculata*, p. 282, Amurland, STAUDINGER, S. E. Z. xlix, n. spp.

Helia quadra, Amurland, GRAESER, B. E. Z. xxxii, p. 378, n. sp.

Epizeuxis betulalis, p. 78, *brunnealis*, *viridialis*, p. 79, Amboyna, PAGENSTECHER, *Verz. Lep. Amb.*, n. spp.

Mastigophora scopigialis, tibia of: HAASE, *CB. Iris*, i, p. 327.

Bertula chalybialis, palpi of ♂: HAASE, *CB. Iris*, i, p. 327.

Bocana tristis, Butl., var.? described; PAGENSTECHER, p. 75, *Verz. Lep. Amb.*

Echana plicalis, scent-organ of ♂: HAASE, *CB. Iris*, i, p. 327.

Egnasia simplex, var. described; PAGENSTECHER, p. 76, *Verz. Lep. Amb.*

Brephos nothum, note on habits; SOHN, *Soc. Ent. i*, p. 76.

GEOMETRIDÆ.

[Cf. ALPHERAKI (3), BAKER (35), CHRISTOPH (151), CONSTANT (161), DRUCE (205, 206), GRAESER (327), GUMPPENBERG (350), HAASE (352), HULST (404, 405), LUCAS (530), MABILLE (537, 539), MERRIFIELD (579), MEYRICK (582, 587), MOORE (611), MÖSCHLER (618), OBERTHUR (629), PAGENSTECHER (653), POPPIUS (678), POULTON (683), PÜNGELER (688), STANDFUSS (864), WARREN (910).]

The origin of wing-venation in *Geometridæ* discussed ; POPPIUS (678).

Urapteryz pluristrigata, India, WARREN, P. Z. S. 1888, p. 318, n. sp.

Lagyr myciteria, Solomon Is., DRUCE, P. Z. S. 1888, p. 577, n. sp.

Salpis antennata, belongs to *Ennomida*, figured and redescribed ; MABILLE, Miss. Sci. Cap Horn, vi, p. 22, pl. ii, fig. 8, pl. iii, fig. 1.

Crocullis similaris, Darjiling, MOORE, Desc. Ind. Lep. p. 227, n. sp.

Antepione sulphurata, Pack., var. = (*imitata*, Edw.) ; HULST, Ent. Am. iv, p. 49.

Heterolocha (?) *snociaria*, New Mexico, HULST, Ent. Am. iii, p. 213, n. sp.

Itania luteolata, var. noticed ; TERO, Ent. xxi, p. 15.

R. tridentifera, Darjiling, MOORE, Desc. Ind. Lep. p. 230, n. sp.

Angerona prunaria, and var. *corylaria*, results of breeding from ; FALLOU, p. lix, Bull. Soc. Ent. Fr. (6) viii.

A. stramineata, India, WARREN, P. Z. S. 1888, p. 319, n. sp.

Metrocampa margaritata, L., and *margaritaria*, W. V., note of query ; SPEYER, S. E. Z. xlix, p. 209. *M. admirabilis*, Oberth., larva described ; GRAESER, B. E. Z. xxxii, p. 392.

Selenia illunaria and *illustraria*, observations on and experiments in breeding ; MERRIFIELD (579). *S. kentaria*, nomenclature noticed ; GROTE, p. 75, Canad. Ent. xx.

S. dentilineata, Darjiling, MOORE, Desc. Ind. Lep. p. 228, n. sp.

Ennomos hyadesi, figured and described ; MABILLE, Miss. Sci. Cap Horn, vi, p. 21, pl. ii, fig. 6.

Eugonia magnaria and *autumnaria*, their distinctions ; HULST, Ent. Am. iv, p. 49.

Pericallia olivescens, *sikkima*, Darjiling, MOORE, Desc. Ind. Lep. p. 228, n. spp.

Endropia albifrons, *anticleata*, Darjiling, MOORE, Desc. Ind. Lep. p. 229, n. spp.

Epione obliquilinea, *adustata*, pl. viii, fig. 20, E. India, MOORE, Desc. Ind. Lep. p. 229, n. spp.

Caustoloma acutipennis, Darjiling, MOORE, Desc. Ind. Lep. p. 230, pl. viii, fig. 7, n. sp.

Petula, n. g., near *Opisthographis*, p. 230, for *P. exanthemata*, n. sp., Darjiling, p. 231 ; MOORE, Desc. Ind. Lep.

Corymica caustolomaria, Darjiling, MOORE, Desc. Ind. Lep. p. 231, n. sp.

Marcula flavifusata, p. 231, pl. viii, fig. 6, *obliquaria*, *irrorata*, p. 232, Darjiling, MOORE, Desc. Ind. Lep., n. spp.

Oxydia vulpinaria, Darjiling, MOORE, Desc. Ind. Lep. p. 232, n. sp.

Psyra debilis (? = *Seniothisa diplotata*, Feld.), India, WARREN, P. Z. S. 1888, p. 319, n. sp.

Decetia pallida, Calcutta, MOORE, Desc. Ind. Lep. p. 232; *D.* (?) *pallidaria*, Amboyna, PAGENSTECHER, p. 82, Verz. Lep. Amb. : n. spp.

Noreia flava, pl. viii, fig. 2, *cervinaria*, Darjiling, p. 233, MOORE, Desc. Ind. Lep., n. spp.

Dichromodes gypsotis = (*Cacopsodos niger*, Meyr., nec Butl.), New Zealand; MEYRICK, Tr. N. Z. Inst. xx, p. 60, n. sp.

Auzea reticulata, Darjiling, MOORE, Desc. Ind. Lep. p. 233, pl. viii, fig. 3, n. sp.

Cimicodes flava, fig. 5, *sanguiflua*, fig. 4, E. India, p. 233, pl. viii, MOORE Desc. Ind. Lep., n. spp.

Sarcinodes lilacina, E. India, MOORE, Desc. Ind. Lep. p. 234; *S.* (?) *holzi*, Amboyna, PAGENSTECHER, p. 83, Verz. Lep. Amb. : n. spp.

Phigalia olivacearia, Morr., and *strigataria*, Minot, distinctions of HULST, Ent. Am. iv, p. 51.

Amphidasia betularius, L., occurrences of the black var. in Germany, &c.; HOFFMANN, S. E. Z. xlix, p. 169, note.

A. regalis, Darjiling, MOORE, Desc. Ind. Lep. p. 234, n. sp.

Apocheima juglansaria, Amurland, GRAESER, B. E. Z. xxxii, p. 396, n. sp.

Cusiala boarmioides, Darjiling, MOORE, Desc. Ind. Lep. p. 234, n. sp.

Chorodna adumbrata, Darjiling, MOORE, Desc. Ind. Lep. p. 235, n. sp.

Medasina similis, *dissimilis*, p. 235, *persimilis*, *fratercula*, p. 236, Darjiling, MOORE, Desc. Ind. Lep., n. spp.

Calicha, n. g. (*Boarmiidae*), for *C. retrahens*, n. sp., Darjiling, MOORE, Desc. Ind. Lep. p. 236.

Menophra deficiens, fig. 23, *torridaria*, fig. 27, *conspicuata*, *pallidaria*, p. 237, *M.?* *rialis*, p. 238, fig. 9, pl. viii, Darjiling, MOORE, Desc. Ind. Lep., n. spp.

Hirasa, n. g., near *Hemerophila*, for *Tephrosia scripturaria*, Walk., and *H. contubernalis*, n. sp., E. India; MOORE, Desc. Ind. Lep. p. 238.

Hemerophila creataria, Gn., scent-organ of ♂; HAASE, CB. Iris. i. p. 328.

H. grummi, Turkestan, ALPHERAKI, S. E. Z. xlix, p. 69; *H. packardaria*, California, HULST, Ent. Am. iii, p. 217 : n. spp.

Xyridacma, n. g., for *Hemerophila hemipteraria*, Gn.; MEYRICK, p. 60, Tr. N. Z. Inst. xx.

Eubgia queenaria, Ab. & Sm.; *pauclataria*, Gr., and *Synopsisia phigalaria*, Gn., are varieties of this; *E. cupidaria*, Gr., is probably the ♂, and *mexicanaria*, Gr., is probably the same species; HULST, Ent. Am. iv, p. 50.

Cleora semiclusaria, Walk., = (*pulchraria*, Minot); HULST, Ent. Am. iv, p. 50.

C. confusa, *duplicata*, *idaioides*, p. 239, *ochrifasciata*, *irrorata*, p. 240, Darjiling, MOORE, Desc. Ind. Lep.; *C. punctomacularia*, *atrifasciata*, California, HULST, Ent. Am. iii, p. 214 : n. spp.

Zylobara and *Pseudocoremia*, Butl., merged in *Boarmia*; MEYRICK, p. 61, Tr. N. Z. Inst. xx.

Pseudocoremia variegata, p. 240, *semialba*, *imbecilis*, *albifera*, p. 241, Darjiling, MOORE, Desc. Ind. Lep., n. spp.

Defunda, Walk., and *Epicasis*, Meyr., merged in *Declana*; MEYRICK, p. 62, Tr. N. Z. Inst. xx,

Azelina, Gn., = (*Stratocleis*, Meyr.); MEYRICK, p. 62, Tr. N. Z. Inst. xx.

Alcis iterata, Butl., and *trikotaria*, Feld., variation, &c., noticed; WARREN, P. Z. S. 1888, p. 320.

A. nudipennis, India, WARREN, p. 320, P. Z. S. 1888; *A. ragans*, pl. viii, fig. 16, *sikkima*, p. 242, *vicina*, p. 243, Darjiling, MOORE, Desc. Ind. Lep. : n. spp.

Darisa, n. g., near *Boarmia*, for *D. maxima*, n. sp., Darjiling; MOORE, Desc. Ind. Lep. p. 243.

Astacuda, n. g., near *Catoria*, p. 243, for *A. cineracea*, *ampla*, n. spp., E. India, p. 244; MOORE, Desc. Ind. Lep.

Catoria olivescens, Darjiling, MOORE, Desc. Ind. Lep. p. 244, n. sp.

Chogadu fraterna, Darjiling, MOORE, Desc. Ind. Lep. p. 245, n. sp.

Burichura, n. g., near *Chogadu*, for *Boarmia imparata*, Walk.; MOORE, Desc. Ind. Lep. p. 245.

Amraica, n. g., *Boarmiide*, for *A. fortissima*, n. sp., Darjiling, and including *Boarmia ponderata*, Feld.; MOORE, Desc. Ind. Lep. p. 245.

Lassaba, n. g., *Boarmiide*, for *L. contaminata*, n. sp., Darjiling; MOORE, Desc. Ind. Lep. p. 246.

Tephrosia texanaria, *fantaria*, *celataria*, *carnearia*, p. 216, *nevadaria*, p. 217, N. America, HULST, Ent. Am. iii, n. spp.

Gnophos nimbat, *crassipunctata*, Turkestan, ALPHERAKI, S. E. Z. xlix, p. 68; *G. burmesteri*, Wladiwostok, GRAESER, B. E. Z. xxxii, p. 402; *G. isometra*, India, WARREN, P. Z. S. 1888, p. 321; *G. granitaria*, p. 246, *tephrosiaria*, p. 247, E. India, MOORE, Desc. Ind. Lep. : n. spp.

Pingasia rufofusciata, *apicalis*, p. 247, *similis*, p. 248, Darjiling, MOORE, Desc. Ind. Lep., n. spp.

Hypochroma, the Australian species described and tabulated; MEYRICK, P. Linn. Soc. N. S. W. (2) ii, pp. 904-915. *H. lahaye*, Ob., figured, pl. vii, fig. 50, distinguished from *Pseudopterna coronillaria*, p. 31; OBERTHUR, Études d'Ent. xii. *H. nyssiata*, Feld., cf. *Liparidæ*.

H. paratorna, p. 906, *acanthina*, p. 917, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Dindica, n. g., for *Hypochroma basiflavata* and *leopardinata*, Moore; MOORE, Desc. Ind. Lep. p. 248.

Psodos quadrisectaria, figured and redescribed; MABILLE, Miss. Sci. Cap Horn, vi, p. 26, pl. iii, fig. 8.

Exelis pyrolaria, Gn., = (*Lepiodes approximaria*, Pack.); HULST, Ent. Am. iv, p. 50.

Epipristia, n. g., for *E. oxygma*, n. sp., Queensland, and *Fidonis rufonigraria*, Wlk.; MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 916.

Xanthames salahuti, Amboyna, PAGENSTECHER, p. 86, Verz. Lep. Amb., n. sp.

Boarmia, note on some N. American species; HULST, Ent. Am. iv,

p. 50, and GROTE, *t. c.* p. 98. *B. repandata*, melanism in ; PORRITT, *Ent. M. M.* xxv, p. 161.

B. saturniaria, p. 398, *lutamentaria*, p. 401, AMURLAND, GRAESER, *B. E. Z.* xxxii ; *B. separaria*, W. Africa, MÖSCHLER, p. 92, *Abh. Senck. Ges.* xv ; *B. viridaria*, p. 84, *nigrofasciata*, p. 85, AMBOYNA, PAGENSTECHER, *Verz. Lep. Amb.* ; *B. furfuraria*, *atrolinearia*, p. 214, *fuliginaria*, *fernaldaria*, *floridaria*, *wrightiaria*, p. 215, *B. ? plumogeraria*, p. 216, N. America, HULST, *Ent. Am.* iii : n. spp.

Pachyodes pictaria, p. 248, *ornataria*, p. 249, E. India, MOORE, *Desc. Ind. Lep.*, n. spp.

The Australian *Geometridæ* and *Acidaliadæ* united as one group, and the genera tabulated ; MEYRICK, *P. Linn. Soc. N.S.W.* (2) ii, pp. 835 & 836.

Perixera porphyropis, Australia, MEYRICK, *P. Linn. Soc. N.S.W.* (2) ii, p. 837, n. sp.

Holothalassia, H., note on the use of this generic name ; SPEYER, *S. E. Z.* xlix, p. 208.

Geometra papilionaria, the protective resemblances of the larva ; POULTON (683) : variety ; SPEYER, *S. E. Z.* xlix, p. 208.

G. dieckmanni, Amurland, GRAESER, *B. E. Z.* xxxii, p. 384 ; *G. tumidilinea*, *biseriata*, Darjiling, MOORE, *Desc. Ind. Lep.* p. 249 : n. spp.

Chlorosea bistriaria, Pack., larva described ; HULST, *Ent. Am.* iii, p. 193.

Thalassodes delicataria, W. Africa, MÖSCHLER, p. 93, *Abh. Senck. Ges.* xv ; *T. lunifera*, E. India, MOORE, *Desc. Ind. Lep.* p. 250 ; *T. palara*, Solomon Is., DRUCE, *P. Z. S.* 1888, p. 577 ; *T. timoclea*, Fiji Is., *id. t. c.* p. 227, pl. xiii, figs. 6 & 7 : n. spp.

Phorodesma smaragdaria, habits and structure of larva ; WHITE, *P. E. Soc.* 1888, p. xx.

P. concinnata, Amboyna, PAGENSTECHER, p. 87, *Verz. Lep. Amb.* (n. sp. ?) ; *P. tenuisaria*, Wladiwostok, GRAESER, *B. E. Z.* xxxii, p. 385 : n. spp.

Agathia asterias, Australia, MEYRICK, *P. Linn. Soc. N.S.W.* (2) ii, p. 899 ; *A. ? divaricata*, E. India, MOORE, *Desc. Ind. Lep.* p. 250, pl. viii, fig. 15 : n. spp.

Iodis, Hb. : MEYRICK includes in this *Thalassodes* *Phorodesma*, *Culacchroma*, *Chlorodes*, and *Comiborna*, and tabulates and describes the Australian species : *P. Linn. Soc. N.S.W.* (2) ii, pp. 870-898.

I. hypsithrona, p. 874, *leucochorda*, *stereota*, p. 875, *bergyllina*, *echthaula*, p. 877, *pyroptea*, *halochlora*, p. 878, *melocrossa* (= *C. citrolinabasa*, Wlk., *nee* Gn.), *ascamanta*, p. 879, *centrophylla*, p. 880, *argocnemis*, *monocyma*, p. 883, *ocyptera*, p. 887, *oxycentra*, p. 888, *rhodocosma*, p. 889, *eroticica*, p. 891, *iosicta*, p. 893, *crossota*, p. 894, Australia. MEYRICK, *P. Linn. Soc. N.S.W.* (2) ii ; *I. glauca*, p. 1263, *angulata*, *subalpina*, p. 1264, *assimilis*, *bicolora*, p. 1265, *gracilis*, *maria*, p. 1266, *eucalypta*, p. 1267, *marginata*, p. 1268, Australia, LUCAS, *P. Linn. Soc. N.S.W.* (2) iii ; *I. minutata*, Solomon Is., DRUCE, *P. Z. S.* 1888, p. 577 : n. spp.

Urolitha, n. g., for *Iodis bipunctifera*, Wlk. ; MEYRICK, *P. Linn. Soc. N.S.W.* (2) ii, p. 865.

Anisodes lunulosa, E. India, MOORE, Desc. Ind. Lep. p. 250, pl. viii, fig. 8, n. sp.

Argilava irrorata, Darjiling, MOORE, Desc. Ind. Lep. p. 251, n. sp.

Eucrostis argocrana, Meyr., habits; LUCAS, Viet. Nat. v, p. 26.

E. argocrana, p. 867, *iocentra*, p. 868, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Comostola, n. g., for *Eucrostis perlepidaria*, Wlk.; MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 869.

Aplodes mimosaria, Gn., = (*coniferaria*, Pack.); HULST, Ent. Am. iv, p. 49.

Thalera lacerataria, Wladiwostok, GRAESER, B. E. Z. xxxii, p. 387, n. sp.

Mecoceras nitocritaria, Cr., = (*peninsularia*, Gr.); HULST, Ent. Am. iv, p. 50.

Heliomytis, n. g., for *H. electrica*, n. sp., Australia; MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 900.

Crypsiphona, n. g., for *C. melanoosema*, p. 901, *amaura*, p. 902, n. spp., Australia, and *Hypochroma occultaria*, Don.; MEYRICK, P. Linn. Soc. N.S.W. (2) ii.

Bardanes, n. g. (*Idalidæ* = *Acidulidæ*, auct.), for *B. plicata*, n. sp., Darjiling, pl. viii, fig. 22; MOORE, Desc. Ind. Lep. p. 251.

Ilyria undulosata, Darjiling, MOORE, Desc. Ind. Lep. p. 251, n. sp.

Runeca, n. g. (*Idalidæ* = *Acidulidæ*, auct.), for *R. ferrilineata*, n. sp., Darjiling, pl. viii, fig. 13; MOORE, Desc. Ind. Lep. p. 252.

Asthenes ochracea, India, WARREN, P. Z. S. 1888, p. 321, n. sp.

Eois parcularia, Texas, E. ? *scintillularia*, Florida, HULST, Ent. Am. iii, p. 213, n. sp.

Idiodes apicata, Gn., = (*Acidalia primaria*, Wlk.); MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 917.

Acidalia: the Australian species tabulated and described, pp. 843-863; MEYRICK, P. Linn. Soc. N.S.W. (2) ii. *A. hepaticaria*, Gn., var. = (*Ciduria erythrata*, Hulst); HULST, Ent. Am. iv, p. 49. *A. schistacearia*, Wlk., referred to *Dichromodes*; MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 917. *A. merklaria*, Ob., figured, pl. v, fig. 13; OBERTHUR, Études d'Ent. xii. *A. calunetaria* n. var. *valesiaria*; PÜNGELER, S. E. Z. xlix, p. 350. *A. dimidiata*, Hfn., metamorphoses and variation described; CHRÉTIEN, Le Nat. (2) ii, pp. 154-156.

A. algeriensis, Sebdou, BAKER, Tr. E. Soc. 1888, p. 118; *A. apicis-limbaria*, Algeria, MABILLE, p. lix, Bull. Soc. Ent. Fr. (6) viii; *A. cernea*, Fiji Is., DRUCE, P. Z. S. 1888, pl. xiii, fig. 8; *A. isomorpha*, *philocosma*, p. 845, *halnæa*, *alopecodes*, p. 846, *pachydetis*, p. 847, *pseliota*, *hypochra*, p. 848, *chloristis*, p. 849, *noxeata*, p. 850, *liotis* = (*compensata*, Wlk., 777 nec 724), p. 854, *axiotis*, p. 855, *orthoscia*, p. 861, *megalocentra*, p. 862, *episcia*, p. 863, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii; *Idea mutanda* (= *Ac. inductata*, Wlk., nec Gn.), *pallida*, India, WARREN, p. 322, P. Z. S. 1888; *I. (Treit.) undulataria*, p. 252, *albomaculata*, *I. ? albosignata*, p. 253, Darjiling, MOORE, Desc. Ind. Lep. : n. spp.

Craspedia kashmirensis, *stigmata*, p. 253, *persimilis*, p. 254, E. India, MOORE, Desc. Ind. Lep., n. spp.

- Luxiaria intensata, fasciosa, obliquata*, E. India, MOORE, Desc. Ind. Lep. p. 254, n. spp.
- Timandra responsaria, albifrontata*, E. India, MOORE, Desc. Ind. Lep. p. 255; *T. prasodes*, Queensland, MEYRICK, P. Linn. Soc. N.S.W. (2) ii. p. 865: n. spp.
- Trygodes ferrifera*, Darjiling, MOORE, Desc. Ind. Lep. p. 255, pl. vii. fig. 17, n. sp.
- Emodesa*, n. g., near *Auzata*, p. 255, for *E. sinuosa*, n. sp., Khasia hills, p. 256, pl. viii. fig. 18; MOORE, Desc. Ind. Lep.
- Agnibesa*, n. g., near *Somatina*, for *S. pictaria*, MOORE, and *A. recurvilineata*, n. sp., Darjiling; MOORE, Desc. Ind. Lep. p. 256.
- Rambara dentifera*, Darjiling, MOORE, Desc. Ind. Lep. p. 256, n. sp.
- Problepsis*, Led., = (*Trichoclada*, Meyr.); MEYRICK, P. Linn. Soc. N.S.W. (2) ii. p. 838.
- P. sancta*, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii. p. 839, n. sp.
- Dithalama*, n. g., for *D. cosmospila*, n. sp., Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii. p. 840.
- Pellonia vibicaria* n. var. *roseata*, p. 201, pl. xi. fig. 2; ERSCHOFF, Hb. Ent. Ross. xxii.
- Argyris metallopectata*, Amboyna, PAGENSTECHER, p. 90, Verz. Lep. Amb.; *A. maia*, Korea, LEECH, p. 647, pl. xxxii. fig. 6, P. Z. S. 1888: n. spp.
- Micronia hermaea*, Fiji Is., DRUCE, P. Z. S. 1888, p. 227, pl. xiii. fig. 9, n. sp.
- Acropteris*, Hb., redescribed, and *Phal. Geom. striataria*, L., referred to it; MOORE, Desc. Ind. Lep. p. 257.
- Pseudomicronia calata* = (*Micronia caudata*, Walk., nec Fab.), E. India; MOORE, Desc. Ind. Lep. p. 257, n. sp.
- Micronidia*, n. g., for *Micronia simpliciatia*, MOORE; MOORE, Desc. Ind. Lep. p. 258.
- Ditrigona*, n. g., for *Urapteryx triangularia*, MOORE; MOORE, Desc. Ind. Lep. p. 258.
- Urapteroides*, n. g., p. 258, for *Micronia astheniata*, Guen.; MOORE, Desc. Ind. Lep. p. 258.
- Strophidia bigthana*, Solomon Is., DRUCE, P. Z. S. 1888, p. 578, n. sp.
- Dirades ruptaria, reticulata*, p. 259, *multistriparia*, p. 260, E. India; MOORE, Desc. Ind. Lep., n. spp.
- Hastina*, n. g., *Eroglidae*, for *H. cavuleo-lineata*, n. sp., Darjiling; MOORE, Desc. Ind. Lep. p. 260.
- Stegania latifasciata*, p. 260, *purpurascens*, p. 261, pl. viii. fig. 19, Darjiling, MOORE, Desc. Ind. Lep., n. spp.
- Corycia binaculata*, Fab., larva described; DELAHAYE, p. cxxxvii. Bull. Soc. Ent. Fr. (6) viii: food plant; CHRÉTIEN, t. c. p. cxlvii.
- C. cinerascens, alba*, Darjiling, MOORE, Desc. Ind. Lep. p. 261, n. spp.
- Bapta atheriata*, Amurland, GRAESER, B. E. Z. xxii. p. 390, n. sp.
- Semiothisa ostentaria, fuscataria*, p. 94, *largificaria*, p. 95, fig. 20, W. Africa, MÜSCHLER, Abh. Senck. Ges. xv; *S. casaria*, N. America, HULST, Ent. Am. iii. p. 217: n. spp.
- Gonodela fuscomarginata*, India, WARREN, P. Z. S. 1888, p. 323; G.

placida, *horridaria*, *hasiana*, E. India, MOORE, Desc. Ind. Lep. p. 262 : n. spp.

Mucaria zimmermanni, Amurland, GRAESER, B. E. Z. xxxii, p. 395 ; *M. deletaria*, pl. viii, fig. 14, *indistincta*, E. India, MOORE, Desc. Ind. Lep. p. 261 ; *M. violarivittata*, Amboyna, PAGENSTECHER, p. 92, Verz. Lep. Amb. : n. spp.

Carige lunulinea, Darjiling, MOORE, Desc. Ind. Lep. p. 263, pl. viii, fig. 26, n. sp.

Errazia trilinearia, Darjiling, MOORE, Desc. Ind. Lep. p. 263, n. sp.

Zeheba aureata, Darjiling, MOORE, Desc. Ind. Lep. p. 263, n. sp.

Zarnigethusa biangulifera, p. 263, *minor*, p. 264, E. India, MOORE, Desc. Ind. Lep., n. spp.

Italia costimaculata, Amurland, GRAESER, B. E. Z. xxxii, p. 403, n. sp.

Tephрина biskraria, Ob., figured, pl. v, fig. 18 ; OBERTHUR, Études d'Ent. xii.

Pœmatodes acutaria, Amboyna, PAGENSTECHER, p. 93, Verz. Lep. Amb., n. sp.

Plutodes cupreata, Amboyna, PAGENSTECHER, p. 94, Verz. Lep. Amb., n. sp.

Phyletis khasiana, *cinerascens*, *similata*, E. India, MOORE, Desc. Ind. Lep. p. 264, n. spp.

Janarda, n. g., *Fidoniidæ*, for *J. acuminata*, n. sp., Darjiling ; MOORE, Desc. Ind. Lep. p. 265.

Gamoruna, n. g., for *Panagra palparia*, Wlk. ; MOORE, Desc. Ind. Lep. p. 265.

Fidonia piniaria, polyandry in ; LANG, Soc. Ent. iii, p. 59.

Numeria pulveraria, L., ab. *violacearia* ; GRAESER, B. E. Z. xxxii, p. 392.

Hyposidra gumppenbergi, W. Africa, MÖSCHLER, p. 96, fig. 5, Abh. Senck. Ges. xv, n. sp.

Ematurga atomaria, L., anatomical note on ; BRANDT (99).

Pseudosterrha, n. g., for *P. ochrea*, n. sp., India ; WARREN, p. 324, P. Z. S. 1888.

Synneuria virgellata, Mab., figured and redescribed ; MABILLE, Miss. Sci. Cap Horn, vi, p. 25, pl. ii, fig. 9.

Aspilates glyphicarius, p. 23, pl. ii, fig. 10, *distictaria*, p. 24, pl. ii, fig. 7, figured and redescribed ; MABILLE, Miss. Sci. Cap Horn, vi. *A. desperarius* n. var. *unicoloraria*, Colorado ; HULST, Ent. Am. iii, p. 217.

Cimelia mimicaria, Ob., figured, pl. v, fig. 14 ; OBERTHUR, Études d'Ent. xii.

Euschemidæ, cf. *antæa*, p. 231.

Abrazas intermedia, p. 324, *diversicolor*, p. 325, India, WARREN, P. Z. S. 1888, n. spp.

Metabrazas falcipennis, Khasia Hills, MOORE, Desc. Ind. Lep. p. 266, pl. viii, fig. 29, n. sp.

Hybernia marginaria var. ; IVY, Ent. xxi, p. 157.

Culcula, n. g. (*Pantheridæ*), for *O. exanthemata*, n. sp., Darjiling ; MOORE, Desc. Ind. Lep. p. 266.

Thaleridia, n. g., p. 266 (*Pantheride*), for *T. pruinosa*, Darjiling, n. sp. p. 267; MOORE, Desc. Ind. Lep.

Arcteuthes chrysopeda, N. Zealand, MEYRICK, Tr. N. Z. Inst. xx, p. 48, n. sp.

Pasiphila, redescrptions of the N. Zealand species, with synonymy; MEYRICK, Tr. N. Z. Inst. xx, pp. 48-53.

P. plinthina, p. 49, *neris*, *sphragitis*, p. 51, New Zealand, MEYRICK, Tr. N. Z. Inst. xx, n. spp.

Phrissogonus, Butl., emended to *Phrixogonus*, and *P.* (sub *Scotosia*) *denotatus*, Walk., described; MEYRICK, Tr. N. Z. Inst. xx, p. 53.

Epyaxa limonodes, New Zealand, MEYRICK, Tr. N. Z. Inst. xx, p. 54, n. sp.

Anisopteryx pometaria, Harr., = (*autumnata*, Pack.) ; HULST, Ent. Am. iv, p. 51.

Larentia semilotaria figured and redescrbed; MABILLE, Miss. Sci. Cap Horn, vi, pl. iii, fig. 4, p. 32.

L. ochreatea, Darjiling, MOORE, Desc. Ind. Lep. p. 267; *L. losora*, Fiji Is., DRUCE, P. Z. S. 1888, p. 228, pl. xiii, fig. 10; *L. mnesichola*, p. 56, *cosmodora*, *bryopsis*, p. 57, *camelias*, *chorica*, p. 58, New Zealand, MEYRICK, Tr. N. Z. Inst. xx : n. spp.

Emmelesia pictaria, Darjiling, MOORE, Desc. Ind. Lep. p. 267, n. sp.

Eupithecia : the species tabulated, arranged in groups, and described; GUMPENBERG, N. Acta Ac. L.-C. Nat. cur. lii, pp. 154-255. *E. curvosa*, note on; GREENE, Ent. xxi, p. 60.

E. rüderaria, Digne, STANDFUSS, B. E. Z. xxxii, p. 243, pl. iii, figs. 7 & 8; *E. pœcilata*, Corsica, PÜNGELER, S. E. Z. xlix, p. 349; *E. quadripunctata*, India, WARREN, P. Z. S. 1888, p. 331; *E. lineosa*, *ustata*, *decorata*, *incurvata*, p. 268, *E. ? griseipennis*, p. 269, pl. viii, p. 28, India, MOORE, Desc. Ind. Lep. : n. spp.

Ardonis, n. g., for *Eupithecia chlorophilata*, Walk.; MOORE, Desc. Ind. Lep. p. 269.

Collix flavofasciata, Darjiling, MOORE, Desc. Ind. Lep. p. 270, pl. viii, fig. 25, n. sp.

Remodes lineosa, fig. 10, pl. viii, *fasciata*, *interruptata*, p. 270, *abnormis*, fig. 11, p. 271, E. India, MOORE, Desc. Ind. Lep., n. spp.

Brabira, n. g., *Larentiidae*, for *B. atkinsoni*, *pallida*, pl. viii, fig. 12, n. spp., Darjiling; MOORE, Desc. Ind. Lep. p. 271.

Lygranon erectilineata, Khasia Hills, MOORE, Desc. Ind. Lep. p. 272, n. sp.

Lepiodes behrensata, Pack. (sub *Eupithecia*), = *Tornos interruptata*, Grt.; HULST, Ent. Am. iv, p. 49.

Lobophora stenoapterata, fig. 6, *ocellata*, fig. 7, *multivirgulata*, fig. 5, figured, pl. iii, redescrbed, pp. 26-29; MABILLE, Miss. Sci. Cap Horn, vi.

L. internata, Asia Minor, PÜNGELER, S. E. Z. xlix, p. 348; *L. sickkima*, pl. viii, fig. 30, *decorata*, India, MOORE, Desc. Ind. Lep. p. 272 : n. spp.

Anticlea plumbeata, *schistacea*, *lateritiatata*, Darjiling, MOORE, Desc. Ind. Lep. p. 273, n. spp.

Ypsipetes undulata, India, WARREN, p. 326, P. Z. S. 1888, n. sp.

Thera consimilis, India, WARREN, p. 326, P. Z. S. 1888, n. sp.

Melanippe sociata, var. from Hebrides, p. 26, woodcut; *M. montanata*, variation, p. 27; SOUTH, Ent. xxi.

M. flavistrigata, India, WARREN, P. Z. S. 1888, p. 329, n. sp.

Campptogramma bilineata, variation in Hebrides; SOUTH, Ent. xxi, p. 27.

Phibalapteryx plurilineata, India, MOORE, Desc. Ind. Lep. p. 273; *P. nigrorittata*, p. 327, *nigripunctata*, p. 328, India, WARREN, P. Z. S. 1888 : n. spp.

Arichanna albovittata, p. 274, *furcifera*, p. 275, Darjiling, MOORE, Desc. Ind. Lep., n. spp.

Eustroma dentifera, *triangulifera*, p. 275, *siderifera*, *decurrens*, = (*Cidaria oblongata*, Walk.), *muscolor*, *porphyriata*, p. 276, India, MOORE, Desc. Ind. Lep., n. spp.

Harpalyce kashmirica, Kashmir, MOORE, Desc. Ind. Lep. p. 277, n. sp.

Scotosia mimosata, scent-organ of ♂; HAASE, CB. Iris, i, p. 329.

S. nigralbata, India, WARREN, P. Z. S. 1888, p. 327; *S. expansa*, *nubilata*, *sordidata*, Darjiling, MOORE, Desc. Ind. Lep. p. 274 : n. spp.

Eutriphosa, n. g., for *Eucosmia veterata*, Christ.; GUMPPENBERG, N. Acta Ac. L.-C. Nat. car. lii, p. 128.

Trichopleura undulosa, China, ALPHERAKI, S. E. Z. xlix, p. 69, n. sp.

Cidaria manitata n. var. *pauperrimata*; CHRISTOPH, p. 310, Hor. Ent. Ross. xxii. *C. citrinaria*, Mab. (sub *Aspilates*), figured, pl. iii, fig. 3, *perornata*, pl. ii, fig. 11, and redescribed, p. 30; *C. mutabilis*, Mab., referred to *Ypsipetes*, figured, pl. iii, fig. 2, and redescribed, p. 31; MABILLE, Miss. Sci. Cap Horn, vi. *C. pupillata*, Thn., descriptive note; MEVES, Ent. Tidskr. ix, pp. 29-31. *C. badiata*, H., note on its generic position; SPEYER, S. E. Z. xlix, p. 211. *C. tophaceata*, Hb., life history; GROSS, t. c. p. 361.

C. ectypata, Tunis, MABILLE, p. lviii, Bull. Soc. Ent. Fr. (6) viii; *C. hortulanaria*, Wladiwostok, p. 408, *rogenhoferi*, p. 409, *corydalaria*, p. 411, Amurland, GRAESER, B. E. Z. xxxii; *C. albofasciata*, *maculata*, *affinis*, p. 277, *seriata*, *curcumata*, *bicolor*, *C. ? obliquisigna*, p. 278, India, MOORE, Desc. Ind. Lep.; *C. subrubescens*, *thomasata*, p. 329, *rostrifera*, *brevifasciata*, p. 330, India, WARREN, P. Z. S. 1888 : n. spp.

Photocotosia, n. g., for *Cidaria amplicata* and *Scotosia miniosata*, Walk.; WARREN, p. 328, P. Z. S. 1888.

Onychia latiritta, *violacea*, pl. viii, fig. 24, India, MOORE, Desc. Ind. Lep. p. 279, n. spp.

Eubolia nasifera, India, WARREN, P. Z. S. 1888, p. 331, n. sp.

Ortholitha pinnaria, KURUSCH, CHRISTOPH, p. 310, Hor. Ent. Ross. xxii, n. sp.

Lithostege fissurata, Tunis, MABILLE, p. lviii, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Chesias linogrisearia, Corsica, CONSTANT, p. 161, pl. iv, fig. 2, Ann. Soc. Ent. Fr. (6) viii, n. sp.

PYRALIDÆ, SICULODIDÆ.

[Cf. BUTLER (116), DRUCE (205), FERNALD (265), HULST (406), JOANNIS (422), MEYRICK (580, 583), MOORE (611), MÖSCHLER (619), OBERTHUR (629), PAGENSTECHER (653), RAGONOT (704, 707), WALSHINGHAM (907), WARREN (910).]

Occurrence of scent-organs in the family ; HAASE, CB. *Iria*, i, p. 329.

Locastra lativitta, Darjiling, MOORE, Desc. Ind. Lep. p. 199, pl. vii, fig. 1, n. sp.

Pannucha, n. g., near *Locastra*, p. 199, for *P. basalis*, pl. vii, fig. 2, *aenescens*, n. spp., Darjiling, p. 200 ; MOORE, Desc. Ind. Lep.

Teliphasa, n. g., p. 200, for *T. orbiculifer*, *nubilosa*, n. spp., Darjiling, p. 201, MOORE, Desc. Ind. Lep.

Orthaga obscura, Darjiling, MOORE, Desc. Ind. Lep. p. 201, n. sp.

Taurica sikkima, Darjiling, MOORE, Desc. Ind. Lep. p. 202, n. sp.

Scopocera, n. g., p. 202, for *S. pyraliata*, p. 202, *sinuosa*, pl. vii, fig. 3, *variegata*, fig. 4, *minor*, p. 203, n. spp., Darjiling ; MOORE, Desc. Ind. Lep.

Sarama, n. g., p. 203, for *S. atkinsonii*, n. sp., Darjiling, p. 204 ; MOORE, Desc. Ind. Lep.

Aglossa harpialis, *rufifualis*, and *basalis*, Walk., and *laminialis*, Gn., assigned to *Actenia* ; WARREN, P. Z. S. 1888, p. 332.

A. brabantii, Basses Alpes, RAGONOT, p. 277, pl. vi, fig. 6, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Banepa, n. g., near *Aglossa*, for *B. atkinsonii*, Darjiling, n. sp. ; MOORE, Desc. Ind. Lep. p. 204.

Rodaba, n. g., for *R. angulipennis*, n. sp., Darjiling ; MOORE, Desc. Ind. Lep. p. 205.

Stemmatophora leonalis, Ob., figured, pl. vi, fig. 38 ; ORERTHUR, Études d'Ent. xii.

S. rudis, Darjiling, MOORE, Desc. Ind. Lep. p. 205, n. sp.

Pyralis listeri, Christmas Is., BUTLER, P. Z. S. 1888, p. 546 ; *P. assamica*, Assam, p. 205, pl. vii, fig. 5, *angulifascia*, *pallivittata*, Darjiling, p. 206, MOORE, Desc. Ind. Lep. : n. spp.

Constantia pectinalis, H.-S., redescribed, p. 162, figured, pl. iv, figs. 3 & 3a ; CONSTANT, Ann. Soc. Ent. Fr. (6) viii.

Doththa simulata, Darjiling, MOORE, Desc. Ind. Lep. p. 206, n. sp.

Actenia (sub *Aglossa*) *gnidusalis*, Walk., = ? (*Scotomera tristis*, Butl., and *Cledeobia infumatalis*, Ersch.) ; WARREN, P. Z. S. 1888, p. 332.

Epipaschia interruptella, Arizona, RAGONOT, p. cl., Bull. Soc. Ent. Fr. (6) viii, n. sp.

Coenodomus, n. g. (*Epipaschiinae*), p. 49, for *C. hockingi*, n. sp., Punjaub, p. 50 ; WALSINGHAM, Tr. L. S. (2) v, pl. v.

Winona, n. g., "type *incrustalis*, Hulst" ; HULST, Ent. Am. iv, p. 113.

Saluda, n. g., "type *asperatella*, Clem." ; HULST, Ent. Am. iv, p. 113.

Katona, n. g., for *K. euphemella*, n. sp., Texas ; HULST, Ent. Am. iv, p. 113.

Tioga, n. g., for *T. applastella*, n. sp., without locality ; HULST, Ent. Am. iv, p. 113.

Loma, n. g., for *L. nephelotella*, n. sp., Pennsylvania ; HULST, Ent. Am. iv, p. 114.

Wanda, n. g., for *W. titellu*, n. sp., Texas ; HULST, Ent. Am. iv, p. 114.

Tetralopha, cf. *Crambida*.

Cledeobia angustalis, sexual characters ; TUTT, Ent. xxi, p. 17 ; BANKES, t. c. p. 59. *C. ? albipalpis*, Pag., referred to *Epizeuxis* ; PAGENSTECHER, p. 77, Verz. Lep. Amb. *C. interjunctalis*, Guen., figured, pl. v, fig. 22,

characters noticed, p. 33 ; *C. luridalis* var. *subolivalis*, Ob., pl. v, fig. 21, figured ; OBERTHUR, Études d'Ent. xii. *C. oculatalis*, redescribed, p. 275, figured, pl. vi, figs. 7 & 8 ; RAGONOT, Ann. Soc. Ent. Fr. (6) viii.

C. bleusei, Biskra, OBERTHUR, Études d'Ent. p. 34, pl. vi, fig. 38 ; *C. berytalis*, Beyrout, RAGONOT, p. 276, pl. vi, fig. 1, Ann. Soc. Ent. Fr. (6) viii : n. spp.

Hercyna nanalis, Schahkuh, CHRISTOPH, p. 310, Hor. Ent. Ross. xxi, n. sp.

Aporodes yaminalis, Biskra, OBERTHUR, Études d'Ent. xii, p. 35, pl. vi, fig. 35, n. sp.

Endotricha loricata, Calcutta, MOORE, Desc. Ind. Lep. p. 206, n. sp.

Porphyritys sikkima, Darjiling, MOORE, Desc. Ind. Lep. p. 207, n. sp.

Syllithra bicolor, E. India, MOORE, Desc. Ind. Lep. p. 207, n. sp.

Ediodes abstrusalis, Calcutta, MOORE, Desc. Ind. Lep. p. 207, n. sp.

Samea quinquigera, Darjiling, p. 207, pl. vii, fig. 14, MOORE, Desc. Ind. Lep. ; *S. (?) bipunctalis*, India, WARREN, P. Z. S. 1888, p. 333 : n. spp.

Mabra flavofimbriata, Calcutta, MOORE, Desc. Ind. Lep. p. 208, n. sp.

Hedylepta contubernalis, Bengal, *gemella*, Calcutta, MOORE, Desc. Ind. Lep. p. 208, n. spp.

Agrotera ferruginata, Darjiling, MOORE, Desc. Ind. Lep. p. 209, n. sp.

Patania, n. g., for *Botys concatenalis*, Walk., and *P. semivivialis*, n. sp., Darjiling, pl. vii, fig. 6 ; MOORE, Desc. Ind. Lep. p. 209.

Lipocosma fuliginosalis, N. America, FERNALD, Ent. Am. iv, p. 37, n. sp.

Duponchelia fovealis, Z., figured, pl. vi, fig. 37 ; OBERTHUR, Études d'Ent. xii.

D. caudalis, Biskra, OBERTHUR, Études d'Ent. xii, p. 36, pl. vi, fig. 39, n. sp.

Metasia emiralis, Algeria, OBERTHUR, Études d'Ent. xii, p. 36, pl. vi, fig. 33, n. sp.

Clepticocoma, n. g., p. 63, for *C. iridia*, n. sp., New Zealand, p. 64 ; MEYRICK, Tr. N. Z. Inst. xx.

Paraponyx (sub *Oligostigma*) *vagalis*, Walk., note on ; WARREN, P. Z. S. 1888, p. 334.

Catarlysta ochripicta, E. India, MOORE, Desc. Ind. Lep. p. 209, n. sp.

Cymoriza linealis, E. India, *inextricata*, pl. vii, fig. 7, Khasia Hills, *rivularis*, fig. 8, p. 210, *marginalis*, Darjiling, p. 211, MOORE, Desc. Ind. Lep., n. spp.

Hydrocampa bengalensis, Calcutta, MOORE, Desc. Ind. Lep. p. 211 ; *H. proprialis*, Florida, &c., FERNALD, Ent. Am. iv, p. 37 : n. spp.

Pramadea, n. g., for *P. denticulata*, n. sp., E. India ; MOORE, Desc. Ind. Lep. p. 211.

Siculodes nitida, *media*, p. 98, *fenestrata*, p. 99, Amboyna, PAGEN-STECHER, Verz. Lep. Amb., n. sp.

Rhodoneura nœrina, Darjiling, MOORE, Desc. Ind. Lep. p. 212, n. sp.

Pharambara reticulata, *alternata*, p. 212, *intimalis*, *hamifera*, *emblicalis*, p. 213, E. India, MOORE, Desc. Ind. Lep., n. spp.

Microscia fasciata, p. 213, pl. vii, fig. 22, *lobulata*, p. 214, Darjiling, MOORE, Desc. Ind. Lep., n. spp.

- Moroca angulalis*, E. India, MOORE, Desc. Ind. Lep. p. 214, n. sp.
Camadena, n. g. (*Siculidæ*), for *C. vespertilionis*, n. sp., Darjiling, pl. vii, fig. 13; MOORE, Desc. Ind. Lep. p. 214.
Haritala auroralis, fig. 17, *recurrens*, fig. 11, E. India, MOORE, Desc. Ind. Lep. p. 215, pl. vii, n. spp.
Polythlipta distorta, fig. 25, p. 215, *peragrata*, fig. 15, p. 216, Darjiling, MOORE, Desc. Ind. Lep., n. spp.
Eschata argentata, *conspurcata*, Darjiling, MOORE, Desc. Ind. Lep. p. 227, n. spp.
Glyphodes chilka, Darjiling, MOORE, Desc. Ind. Lep. p. 216, pl. vii, fig. 9, n. sp.
Margarodes quadristigmatis, life history, descriptions, and figures; *Ins. Life*, i, pp. 22-26, fig. 4.
M. tricoloralis, Amboyna, PAGENSTECHER, p. 106, Verz. Lep. Amb.; *M. exaula* (= *Margaronia glauculalis*, Butl., nec Gn.), Hawaiian Is. MEYRICK, Tr. E. Soc. 1888, p. 213: n. spp.
Synclera bleusei, Ob., figured, pl. vi, fig. 42; OBERTHUR, Études d'Ent. xii.
S. tibialis, Darjiling, MOORE, Desc. Ind. Lep. p. 216, n. sp.
Margaronia bryozalis, Walk., = (*Cirrhochrista ætherialis*, Led.) and *M. acciusalis*, Wlk., referred to *Cirrhochrista*, p. 226, the former figured, pl. vii, fig. 10; MOORE, Desc. Ind. Lep. *M. glauculalis*, Gn., = (*oceanalis*, Meyr.); DRUCE, P. Z. S. 1888, p. 229.
M. fraterna, E. India, MOORE, Desc. Ind. Lep. p. 217, n. sp.
Pitama, n. g. (*Margaroniidæ*), for *P. lativitta*, n. sp., Darjiling, pl. vii, fig. 21; MOORE, Desc. Ind. Lep. p. 217.
Rhagoba, n. g., p. 217 (*Margaroniidæ*), for *R. octomaculata*, Feld., and *himaculata*, n. sp., Darjiling, p. 218; MOORE, Desc. Ind. Lep.
Chlauges nigroviridialis, Amboyna, PAGENSTECHER, p. 109, Verz. Lep. Amb., n. sp.
Filodes patruelis, E. India, MOORE, Desc. Ind. Lep. p. 218, n. sp.
Charema, n. g., p. 218 (*Margaroniidæ*), for *C. noctescens*, p. 218, *albociliata*, *imbecilis*, pl. vii, fig. 23, p. 219, n. spp., E. India; MOORE, Desc. Ind. Lep.
Chobera, n. g., p. 219 (*Hapaliidæ*), for *C. pallida*, n. sp., Calcutta, p. 219; MOORE, Desc. Ind. Lep.
Circobotys limbata, Darjiling, p. 220, pl. vii, fig. 24, MOORE, Desc. Ind. Lep., n. sp.
Botyodes asiaticus, Gn., = (*Lygropis sirioxantha*, Meyr.); DRUCE, P. Z. S. 1888, p. 229.
B. inconspicua, p. 220, *fraterna*, fig. 16, *costalis*, *leopardalis*, fig. 26, p. 221, pl. vii, Darjiling, MOORE, Desc. Ind. Lep., n. spp.
Botys: the Sandwich Islands species are referred to *Omiodes*; MEYRICK, Tr. E. Soc. 1888, pp. 214-217. *B. trinalis* var. *tripunctalis*, Ob., figured, pl. vi, fig. 41, it is not a var. of *flavalis*, p. 37; OBERTHUR, Études d'Ent. xii. *B. magistralis* and *erectalis*, Gr., larvæ described; BEUTENMÜLLER, Canad. Ent. xx, p. 15.
B. retowskyi, Crimea, MÖSCHLER, S. E. Z. xlix, p. 128; *B. serotimalis*, p. 272, pl. vi, fig. 2, *cineracealis*, p. 273 & fig. 3, Beyrout, JOANNIS, Ann.

Soc. Ent. Fr. (6) viii ; *B. plumbosignalis*, Colorado, FERNALD, Ent. Am. iv, p. 37 : n. spp.

Ilapalia nigrescens, p. 221, *kasmirica*, fig. 28, *bambusalis*, *robusta*, fig. 27, *oblita*, p. 222, *indistans*, *dorsivittata*, fig. 18, *flavofasciata*, fig. 19, *fusciata*, fig. 20, p. 223, pl. vii, E. India, MOORE, Desc. Ind. Lep., n. spp.

Ebulea dichroma, p. 223, *obliquata*, *bambucivora*, p. 224, E. India, MOORE, Desc. Ind. Lep., n. spp.

Pionea africalis, pl. vii, fig. 43, *bifusciatis*, pl. vi, fig. 40, figured ; OBERTHUR, Études d'Ent. xii.

P. nobilis, Darjiling, MOORE, Desc. Ind. Lep. p. 224, pl. vii, fig. 29, n. sp.

Murasmia aurea, Fiji Is., DRUCE, P. Z. S. 1888, p. 230, n. sp.

Udea renalis, Darjiling, MOORE, Desc. Ind. Lep. p. 224, n. sp.

Conogethes punctiferalis, Gn., destructive to maize in Queensland ; BANCROFT (41).

C. alboflavalis, Darjiling, MOORE, Desc. Ind. Lep. p. 220, n. sp.

Orobena renatalis, pl. vi, fig. 36, *allardalis*, pl. vii, fig. 54, figured ; OBERTHUR, Études d'Ent. xii.

Spilodes algerialis, All., characters noticed, p. 38 ; OBERTHUR, Études d'Ent. xii.

Scopula: to this are referred several Hawaiian *Pyralidæ* placed in other genera by Butler ; MEYRICK, Tr. E. Soc. 1888, pp. 218-223. *S. illutalis*, Guen., figured, pl. vii, fig. 45 ; OBERTHUR, Études d'Ent. xii.

S. eucrena, p. 218, *argoscelis*, p. 222, Hawaiian Is. ; MEYRICK, Tr. E. Soc. 1888, n. spp.

Protocolletis, n. g., for *Scopula constricta*, Butl. ; MEYRICK, Tr. E. Soc. 1888, p. 223.

Mecyna teriadalis, Guen., figured, pl. vii, fig. 44, its habitat is not Algeria, p. 39 ; OBERTHUR, Études d'Ent. xii.

Orthomecyna aphanopia, Hawaiian Is., MEYRICK, Tr. E. Soc. 1888, p. 227, n. sp.

Mestolobes cenone and *Metasius abnormis*, Butl., are the sexes of one species, to be called *Mestolobes abnormis* ; MEYRICK, Tr. E. Soc. 1888, p. 228.

Omiodes monogona, p. 216, *liodyta*, p. 217, Hawaiian Is., MEYRICK, Tr. E. Soc. 1888, n. spp.

Parbattia, n. g. (*Scopariidæ*), for *P. vialis*, n. sp., Darjiling, pl. vii, fig. 30 ; MOORE, Desc. Ind. Lep. p. 225.

Scoparia venosa, *havaiensis*, *formosa*, and *jucunda*, Butl., referred to *Xeroscopa* ; MEYRICK, Tr. E. Soc. 1888, pp. 233-238. *S. gracialis*, Doub., is *alpina*, Dale ; MASON, Ent. M. M. xxv, p. 162. *S. frigida*, Butl., = (*montana*, id.) ; MEYRICK, Tr. E. Soc. 1888, p. 231. *S. cembra*, larva described, habits ; WOOD, Ent. M. M. xxv, pp. 126 & 127.

S. macrophanes, Hawaiian Is., MEYRICK, Tr. E. Soc. 1888, p. 231 ; *S. encypna*, *colpota*, New Zealand, id. p. 65, Tr. N. Z. Inst. xx : n. spp.

Xeroscopa melanopis, p. 233, *ombrodes*, *demodes*, p. 234, *ischnias*, p. 235, *pachyema*, p. 236, *mesoleuca*, p. 237, MEYRICK, Tr. E. Soc. 1888, n. spp.

Acentropus, on a species at Dorpat ; KENNEL (433). *A. nireus* in Norfolk ; BARRETT, Ent. M. M. xxiv, p. 198.

CRAMBIDÆ.

[*Cf.* CHRISTOPH (151), COCKERELL (155), COSTA (164), FERNALD (265, 267), HULST (406), JOANNIS (422), MABILLE (537), MEYRICK (580, 583), MOORE (611), OBERTHUR (629), RAGONOT (702, 703, 704, 706), RICHARDSON (750), WARREN (910).]

Rhctophlebia, n. g. (*Galleriides*), for *R. monilella*, n. sp., Colombia; RAGONOT, p. 52, *Nouv. Phycit.*

Aphomia sociella, food of larva; DIGBY, *Ent. M. M.* xxiv, p. 186.

Epimorius testaceus, Jamaica, RAGONOT, *N. Am. Phycit.* p. 20, n. sp.

Melissoblastes fuscoclimbellus, N. America, RAGONOT, *N. Am. Phycit.* p. 20, n. sp.

Dysphyllia, n. g. (*Phycitides*), for *D. viridella*, n. sp., Madagascar; RAGONOT, *Nouv. Phycit.* p. 5.

Susia, n. g., p. 5, for *S. discamaculella*, n. sp., Schahkuh, p. 6; RAGONOT, *Nouv. Phycit.*

Mahela, n. g., for *M. saalmulleri*, n. sp., Madagascar; RAGONOT, *Nouv. Phycit.* p. 6.

Mabillia, n. g., for *M. cerostomella*, n. sp., Lagoa Bay; RAGONOT, *Nouv. Phycit.* p. 6.

Cryptoblabes angustipennella, Ind. or., RAGONOT, *Nouv. Phycit.* p. 6, n. sp.

Cathyalia, n. g., for *C. fulcella*, n. sp., Celebes; RAGONOT, *Nouv. Phycit.* p. 7.

Luconia, n. g., for *L. pallidobasella*, n. sp., Sarawak; RAGONOT, *Nouv. Phycit.* p. 7.

Myelois immaculatella, Turkestan, *pallipedella*, Corsica, *nigristrigella*, Rio Negro, p. 7, *grossipunctella*, hab. ?, *furcoidorsella*, Porto Rico, *perreasiella*, Goya, p. 8, RAGONOT, *Nouv. Phycit.*; *M. talebella*, pl. vi, fig. 29, *zelicella*, fig. 25, p. 40, *zohrella*, fig. 32, p. 41, Biskra, OBERTHUR, *Études d'Ent.* xii; *M. (?) carnea*, India, WARREN, *P. Z. S.* 1888, p. 336; *M. bilineatella*, *duplipunctella*, *rectistrigella*, *coniella*, N. America, RAGONOT, *N. Am. Phycit.* p. 3 : n. spp.

Rhodophea notulella, Natal, *ebeniella*, Lagoa Bay, RAGONOT, *Nouv. Phycit.* p. 8; *R. heringii*, Ceylon, *id.* p. 282, *Ann. Soc. Ent. Fr.* (6) viii; *R. pallicornella*, Texas, *id.* *N. Am. Phycit.* p. 3 : n. spp.

Pterothrix, n. g., p. 8, for *P. caucasiella*, n. sp., p. 9, Caucasus; RAGONOT, *Nouv. Phycit.*

Hypargyria, n. g., for *H. metalliferella*, n. sp., Ind. or. and Africa; RAGONOT, *Nouv. Phycit.* p. 9.

Hemiptilocera, n. g., for *H. chionographella*, n. sp., Chanchamayo; RAGONOT, *Nouv. Phycit.* p. 9.

Sematoneura, n. g., p. 9, for *S. atrovirensella*, n. sp., Chanchamayo, p. 10; RAGONOT, *Nouv. Phycit.*

Muscidia, n. g., for *M. nigricornella*, n. sp., Lagoa Bay; RAGONOT, *Nouv. Phycit.* p. 10.

Hypsipyla, n. g., for *H. pagodella*, n. sp., Ind. or.; RAGONOT, *Nouv. Phycit.* p. 10.

Oryctonotopia, n. g., for *O. fossulatella*, n. sp., Irazu; RAGONOT, *Nouv. Phycit.* p. 11.

Piemnopoda rufulella, Porto Rico, RAGONOT, p. cxxxix, Bull. Soc. Ent. Fr. (6) viii ; *P. egenella*, Rio Negro, *id.* Nouv. Phycit. p. 11 : n. spp.

Acrobasis nigrescens, India, WARREN, P. Z. S. 1888, p. 336 ; *A. amplexella*, p. 3, *comptella*, *palliolella*, *caryivorella*, p. 4, N. America, RAGONOT, N. Am. Phycit. ; *A. albocapitella*, Canada, HULST, Ent. Am. iv, p. 116 : n. spp.

Hyalospila, n. g., for *H. stictoneurella*, *subaquilella*, Guatemala, p. 11, *semibrunneella*, New Grenada, *leuconeurella*, Celebes, p. 12, n. spp. ; RAGONOT, Nouv. Phycit.

Spermatophthora (?) *pulverulenta*, India, WARREN, P. Z. S. 1888, p. 336, n. sp.

Phycita arctella, Bahamas, RAGONOT, N. Am. Phycit. p. 4 ; *P. moeschleri*, Porto Rico, *gilvibasella*, Algeria, *id.* Nouv. Phycit. p. 12 : n. spp.

Phycitopsis, n. g., for *P. flavicornella*, n. sp., Texas ; RAGONOT, N. Am. Phycit. p. 4.

Dasypygus carbonella, Texas, HULST, Ent. Am. iv, p. 117, n. sp.

Lipographis decimerella, Texas, *niviella*, Colorado, HULST, Ent. Am. iv, p. 117, n. spp.

Dioryctria decuriella and its allies, synonymical note ; RAGONOT, Ent. M. M. xxiv, p. 224.

D. miniatella, p. 4, *pygmælla*, p. 5, N. America, RAGONOT, N. Am. Phycit., n. spp.

Dasypygus, n. g., for *D. alternosquamella* (with var. *stictophorella*), n. sp., California ; RAGONOT, N. Am. Phycit. p. 5.

Coleothrix, n. g., for *C. crassitibiella*, n. sp., Sarawak ; RAGONOT, Nouv. Phycit. p. 12.

Promylea, n. g., for *P. lunigerella*, n. sp., Vancouver I. ; RAGONOT, N. Am. Phycit. p. 5 : and *P. paulsoni*, n. sp., Chili, *id.* Nouv. Phycit. p. 12.

Ortholepis, n. g., for *O. jugosella*, n. sp., N. America ; RAGONOT, N. Am. Phycit. p. 6.

Pristocera deltagrammella, Achal-Tekké, RAGONOT, Nouv. Phycit. p. 13, n. sp.

Melitene, n. n., to replace *Isauria*, Rag. ; RAGONOT, Nouv. Phycit. p. 13.

Tetralopha callipeplella (? *mililella*, Z.), Texas, HULST, Ent. Am. iv, p. 114 ; *T. scabridella*, *insularella*, Porto Rico, RAGONOT, p. cxxxviii, Bull. Soc. Ent. Fr. (6) viii ; *T. humerella*, Texas, *fuscototella*, Arizona, *id.* t. c. p. cli : n. spp.

Phidotricha, n. g., near *Tetralopha*, for *P. erigens*, n. sp., Porto Rico ; RAGONOT, p. cxxxix, Bull. Soc. Ent. Fr. (6) viii.

Pristophora walsinghami, *denticulella*, *rubrisparsella*, N. America, RAGONOT, N. Am. Phycit. p. 6, n. spp.

Succadana, n. g., for *S. marmorella*, n. sp., Sarawak ; RAGONOT, Nouv. Phycit. p. 13.

Daria, n. g., p. 13, for *D. caenosella*, n. sp., p. 14, Marghilan ; RAGONOT, Nouv. Phycit.

Cundiops, n. g., for *C. verruciferella*, Natal, *joannisella*, Ind. or., n. spp. ; RAGONOT, Nouv. Phycit. p. 14.

Nephopteryx abietella, S. V., life history, description of larva ; ATMORE, Ent. M. M. xxiv, pp. 221-224 : habits ; SCHMIDT, Soc. Ent. iii, p. 75. *N.*

splendidella, H.-S., notes on its habits and larva ; STAINTON, Ent. M. N. xxiv, pp. 269-272.

N. plumigerella, Guatemala, p. 14, *rhyparella*, *eugraphella*, Ind. or., *signella*, Afghanistan, *drucei*, Guatemala, *melanotæniella*, Transcaucasia, *elegans*, *riculella*, *nigricans*, *delineatella*, Accra, *natalensis*, *lativittella*, Natal, *carteri*, Gambia, *ochrobaphella*, Transalai, p. 16, *inconspicua*, Ind. or., p. 17, RAGONOT, Nouv. Phycit. ; *N. filiolella*, Texas, HULST, Ent. Am. iv, p. 117 ; *N. grotella*, p. 6, *quercicolella*, *annulosella*, *curvatella*, *subtinctella*, *rufibasella*, p. 7, *inquilinella*, *crassifasciella*, p. 8, N. America, RAGONOT, N. Am. Phycit. : n. spp.

Pempelia lacteomarginata, Sardinia, COSTA, Atti Acc. Napoli (2) n. No. 8, p. 36, n. sp.

Canthelia lucida, India, WARREN, P. Z. S. 1888, p. 336, n. sp.

Pococera variella, p. cli, *melanographella*, *tezanella*, p. clii, TEXAS, RAGONOT, Bull. Soc. Ent. Fr. (6) viii, n. spp.

Pogononeura, n. g., for *P. hirticostella*, n. sp., Damaraland ; RAGONOT, Nouv. Phycit. p. 17.

Pleurochila, n. g., for *P. erschoffella*, n. sp., Turkestan ; RAGONOT, Nouv. Phycit. p. 17.

Meroptera uvinella, N. America, RAGONOT, N. Am. Phycit. p. 8, n. sp.

Salebria icterella, China, *guatemalaella*, Guatemala, *africanella*, Natal, *interniplagella*, Gambia, *rectilineella*, Senegambia, *komaroffi*, Transcaucasia, *grapholithella*, Natal, p. 18, *turpidella*, hab. ? , *obscuricostella*, Senegambia, *auricilliella*, Svakop, *burkhunella*, Kuldja, p. 19, RAGONOT, Nouv. Phycit. ; *S. pumilella*, *nubiferella*, *subfuscella*, p. 8, *fernaldi*, *oberthuriella*, p. 9, N. America, *id.*, N. Am. Phycit. : n. spp.

Selagia lithosella, Arizona, RAGONOT, N. Am. Phycit. p. 9, n. sp.

Pyla (Grote Cat.), n. g., type *scintillans*, Gr. and including *P. anoviridella*, n. sp., N. America ; RAGONOT, N. Am. Phycit. p. 9.

Bazaria ruscinonella, Perpignan, RAGONOT, Nouv. Phycit. p. 19, n. sp.

Oligochroa, n. g., for *O. piliferella*, *terrella*, *akbarella*, *soricinella*, Ind. or., p. 20, *subterrella*, *fuscitella*, Senegambia, *nodicornella*, Ind. or., *coriacella*, Sumatra, Natal, *ocelliferella*, China, *ochromelanella*, p. 21, *atratella*, *siderella*, Natal, p. 22, n. spp. ; RAGONOT, Nouv. Phycit. : and *O. pella-cidella*, n. sp., Porto Rico, *id.* p. cxi, Bull. Soc. Ent. Fr. (6) viii.

Epicrocis hilarella, Hongkong, RAGONOT, Nouv. Phycit. p. 22, n. sp.

Hydaspia, n. g., for *H. dorsipunctella*, n. sp., Ind. or. ; RAGONOT, Nouv. Phycit. p. 22.

Laodamia, n. g., for *L. anochreella*, n. sp., N. Guinea ; RAGONOT, Nouv. Phycit. p. 22.

Myrlaca pulverulentella, Palestine, RAGONOT, Nouv. Phycit. p. 23, n. sp.

Elataspalpus corrientellus, *pyrrhochrellus*, Corrientes, *anthracellus*, Rio Negro, RAGONOT, Nouv. Phycit. p. 23, n. spp.

Sigmatrhia, n. g., for *S. palpella*, n. sp., Sarawak ; RAGONOT, Nouv. Phycit. p. 23.

Senpronis, n. g., for *S. stygella*, n. sp., Sydney, RAGONOT, Nouv. Phycit. p. 24.

Bassa, n. g., for *B. maculella*, n. sp., Accra ; RAGONOT, Nouv. Phycit. p. 24.

Homœographa, n. g., p. 24, for *H. lanceolata*, n. sp., Callao, p. 25 ; RAGONOT, Nouv. Phycit.

Microthrix, n. g., for *M. fuscidorsella*, n. sp., Natal ; RAGONOT, Nouv. Phycit. p. 25.

Auzacia, n. n., to replace *Aria*, Rag. ; RAGONOT, Nouv. Phycit. p. 25.

Anoristia inanitella, Ind. or., RAGONOT, Nouv. Phycit. p. 25 ; *A. olivella*, California, HULST, Ent. Am. iv, p. 117 ; *A. flavidorsella*, N. America, RAGONOT, N. Am. Phycit. p. 9 : n. spp.

Epischuia bankesiella, Portland, RICHARDSON, Ent. M. M. xxv, p. 63 ; *E. ruderella*, *granitella*, p. 9, *subcostella*, *fulvirugella*, p. 10, N. America, RAGONOT, N. Am. Phycit. : n. spp.

Centrometopia ectypella, Derbent, p. 25, *baliella*, Askhabad, p. 26, RAGONOT, Nouv. Phycit., n. spp.

Getulia, n. g., for *G. institella*, n. sp., Gambia ; RAGONOT, Nouv. Phycit. p. 26.

Megasis polyphemella, *pullatella*, N. America, RAGONOT, N. Am. Phycit. p. 10 ; *M. acomptella*, Kuldja, *id.* Nouv. Phycit. p. 26 : n. spp.

Bradyrrhoa mesobaphella, *holopyrrhella*, Russian Armenia, RAGONOT, Nouv. Phycit. p. 26, n. spp.

Lipographis, n. g., p. 10, type *fenestrella*, Pack., and including *L. humilis*, n. spp., California ; RAGONOT, N. Am. Phycit.

Hypochalcia hulstiella, Texas, RAGONOT, N. Am. Phycit. p. 11, n. sp.

Sarata, n. g., for *S. dophnerella*, *nigrifusciella*, n. spp., N. America ; RAGONOT, N. Am. Phycit. p. 11.

Synoria, n. g., type *antiquella*, H.-S., including *S. euglyphella*, n. sp., Transvaal ; RAGONOT, Nouv. Phycit. p. 27.

Etiella walsinghamella, *ochristrigella*, N. Guinea, RAGONOT, Nouv. Phycit. p. 27, n. spp.

Diviana, n. g., for *D. eudoreella*, n. sp., N. America ; RAGONOT, Nouv. Phycit. p. 27.

Valdivia, n. g., p. 27, for *V. coquimbella*, n. sp., Chili, p. 28 ; RAGONOT, Nouv. Phycit.

Thospia, n. g., for *T. crassipalpella*, Schahkub, *alboriculella*, Namangan, *permixtella*, Askhabad, n. spp. ; RAGONOT, Nouv. Phycit. p. 28.

Heterographis fathmella, Biskra, OBERTHUR, p. 39, pl. vi, fig. 30, Études d'Ent. xii ; *H. singhalella*, Ceylon, RAGONOT, p. 283, Ann. Soc. Ent. Fr. (6) viii ; *H. morrisonella*, p. 11, *coloradensis*, p. 12, N. America, *id.* N. Am. Phycit. ; *H. interjectella*, Transvaal, *mysorella*, *suboblitella*, Ind. or., *plumbatella*, Achal-Tekké, *subpyrethrella*, Damaraland, *rufociliella*, Lagoa Bay, p. 29, *cordubensiella*, S. America, p. 30, *id.* Nouv. Phycit. : n. spp.

Ancylosis capensis, S. Africa, *turaniella*, Achal-Tekké, *ulbidella*, Marghilan, RAGONOT, Nouv. Phycit. p. 30, n. spp.

Cubotia, n. g., for *C. semidiscella*, n. sp., S. America, RAGONOT, Nouv. Phycit. p. 30.

Honori glaucatella, p. 117, *obsipella*, *fuscataella*, p. 118, Texas, HULST, Ent. Am. iv ; *H. ochrimaculella*, *canicostella*, *sciurella*, *subsciurella*, N. America, RAGONOT, N. Am. Phycit. p. 12 : n. spp.

Alispoides, n. g., p. 30, for *A. vermiculella*, n. sp., Natal, p. 31, RAGONOT, *Nouv. Phycit.*

Zophodia longipennella, Texas, HULST, *Ent. Am.* iv, p. 118; *Z. packardella*, p. 12, *dilatifasciella*, p. 13. N. America, RAGONOT, *N. Am. Phycit.*; *Z. alveolella*, *brevistrigella*, *goyensis*, *pachytaniella*, *inornatella*, S. America, RAGONOT, *Nouv. Phycit.* p. 31 : n. spp.

Psorosa ulmella, N. America, RAGONOT, *N. Am. Phycit.* p. 13, n. sp.

Dakrura ephestiella, Arizona, RAGONOT, *N. Am. Phycit.* p. 13, n. sp.

Macrorrhinia, n. g., for *M. aureofasciella*, n. sp., Arizona; RAGONOT, *N. Am. Phycit.* p. 13.

Dolichorrhinia, n. n., to replace *Macrorrhinia*, Rag.; RAGONOT, *Nouv. Phycit.* p. 28.

Cateremna tumidulella, Florida, RAGONOT, *N. Am. Phycit.* p. 13, n. sp.

Nyctegretia inclinella, Bathurst, Zanzibar, RAGONOT, *Nouv. Phycit.* p. 32, n. sp.

Euzophera gigantella, Mexico, *dadaella*, Chanchamayo, *perticella*, Calcutta, *stramentella*, Natal, *luculentella*, Turkestan, *scabrella*, Acra, p. 32, *neomeniella*, Natal, p. 33, RAGONOT, *Nouv. Phycit.*; *E. agnella*, *nigricantella*, *ferruginella*, *senorella* (altered to *sonorella* in *Nouv. Phycit.*), N. America, RAGONOT, *N. Am. Phycit.* p. 14 : n. spp.

Vitula, n. g., p. 14, for *V. dentosella*, p. 14, *serratilineella*, *basimaculata*, p. 15, n. spp., N. America; RAGONOT, *N. Am. Phycit.*

Homocosoma unionella, Mexico, *dilatata*, Chili, *nitidella*, Beyroth, *punctistrigella*, Ind. or., *olivaceella*, St. Thomas, *illuviella*, Mexico, p. 33, *ezustella*, Perpignan, *subbinavella*, Sarepta, *longiventrella*, *acmoxoptera*, *nimbosella*, Chili, *affusella*, Cordova, p. 34, *magellanella*, Punta Arenas, *goliathella*, *alborittella*, Ind. or., *scopulella*, *botydella*, Natal, *exiguella*, Colombia, p. 35, RAGONOT, *Nouv. Phycit.*; *H. candidella*, Arizona, HULST, *Ent. Am.* iv, p. 118; *H. texanella*, *tenuipunctella*, *albescensella*, *mucidella*, p. 15, *anguliferella*, p. 16, N. America, RAGONOT, *N. Am. Phycit.* : n. spp.

Ephesiodes, n. g., for *E. gilvescensella*, *infimella*, *erythrella*, n. spp., N. America; RAGONOT, *N. Am. Phycit.* p. 16 : and *E. lucidibasella*, Chili, p. 35, *productella*, S. America, p. 36, n. spp., *id.* *Nouv. Phycit.*

Eurythmia, n. g., for *E. ignidorsella*, n. sp., Arizona; RAGONOT, *N. Am. Phycit.* p. 16.

Hornigia, n. g., p. 16, for *H. obtusangulella*, p. 16, *lugubrella*, p. 17, n. spp., N. America; RAGONOT, *N. Am. Phycit.* : and *H. clitelatella*, Callao, n. sp., *id.* *Nouv. Phycit.* p. 36.

Ephestia kühniella, determination of sex of larva; POULTON, *Tr. E. Soc.* 1888, p. 599, pl. xvii, figs. 9 & 10. *E. semirufa*, Stn., redescribed, larva; WOOD, *Ent. M. M.* xxiv, pp. 250 & 251.

E. fuscifasciella, *rileyella*, N. America, RAGONOT, *N. Am. Phycit.* p. 17; *E. calanella*, Andalusia, *icosiella*, Algeria, *bizonella*, Sarepta, *id.* *Nouv. Phycit.* p. 36 : n. spp.

Bethulia, n. g., for *B. championella*, n. sp., Guatemala; RAGONOT, *Nouv. Phycit.* p. 37.

Aspithra, n. g., for *A. maculicostella*, n. sp., Marquesas; RAGONOT, *Nouv. Phycit.* p. 37.

Pima, n. g., for *P. fosterella*, n. sp., Colorado; HULST, *Ent. Am.* iv, p. 114.

Oreana, n. g., "type *unicolorella*, Hulst"; HULST, Ent. Am. iv, p. 115.
Sciota, n. g., for *S. croceella*, n. sp., Texas; HULST, Ent. Am. iv, p. 115.
Tacoma, n. g., for *T. feriella*, n. sp., Texas; HULST, Ent. Am. iv, p. 115.
Tullula, n. g., "type *atrifascialis*, Hulst"; HULST, Ent. Am. iv, p. 115.
Tehama, n. g., "type *bonifatella*, Hulst"; HULST, Ent. Am. iv, p. 115.
Mona, n. g., p. 115, for *M. olbiella*, n. sp., Colorado, p. 116; HULST, Ent. Am. iv.

Altoona, n. g., "type *opacella*, Hulst"; HULST, Ent. Am. iv, p. 116; and *ardiferella*, Texas, n. sp. *id. t. c.* p. 118.

Welaka, n. g., "type *multilivella*, Hulst"; HULST, Ent. Am. iv, p. 116.

Cayuga, n. g., "type *gemmatella*, Hulst"; HULST, Ent. Am. iv, p. 116.

Petaluma, n. g., "type *illibella*, Hulst"; HULST, Ent. Am. iv, p. 116.

Uinta, n. g., for *U. oreadella*, n. sp., Colorado; HULST, Ent. Am. iv, p. 116.

Ancylolomia, n. fam., for *Ancylolomia* and several other gg., and the following three:—*Arazutes*, n. g., type *Crambus pulcherrimus*, Stgr.; RAGONOT, p. 281, Ann. Soc. Ent. Fr. (6) viii. *Elethya*, n. g., type *Prionopteryx subacissa*, Chr.; *id. t. c.* *Mesolia*, n. g., for *M. pandavella*, n. sp., E. India; *id. t. c.* p. 282.

Ancylolomia hipponella, Algeria, RAGONOT, p. 279, pl. vi, figs. 11 & 12, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Genophantis, n. g., *Anerastinae*, p. 245, for *G. iodora*, n. sp., Hawaiian Is., p. 246; MEYRICK, Tr. E. Soc. 1888.

Saborma, n. g., for *S. forcipella*, n. sp., Sumatra; RAGONOT, Nouv. Phycit. p. 37.

Emmalocera, n. g., for *E. leucopseurella*, Accra, *crenatella*, Borneo, *umbricostella*, *lucidicostella*, Ind. or., n. spp., RAGONOT, Nouv. Phycit. p. 38.

Lodiana, n. g., for *L. umbrivittella*, n. sp., Ind. or.; RAGONOT, Nouv. Phycit. p. 38.

Polyocha resculella, *carnatella*, *detritella*, *variegatella*, Ind. or., *erythrinella*, Abyssinia, *monochromella*, Schahkuh, *costella*, Senegambia, RAGONOT, Nouv. Phycit. p. 39, n. spp.

Patna, n. g., for *P. eboricostella*, n. sp., Ind. or.; RAGONOT, Nouv. Phycit. p. 39.

Biafra, n. g., for *B. concinnella*, Natal, *rhodinella*, Accra, n. spp.; RAGONOT, Nouv. Phycit. p. 40.

Ematheudes pseudopunctella, Syria, *paleatella*, p. 40, *crassinotella*, Natal, *euclystella*, Brazil, p. 41, RAGONOT, Nouv. Phycit., n. spp.

Tolima, n. g., for *T. oberthurii*, New Grenada, *phycitella*, Accra, n. spp.; RAGONOT, Nouv. Phycit. p. 41.

Mangala, n. g., for *M. crassiscapella*, n. sp., Centr. Africa, RAGONOT, Nouv. Phycit. p. 41.

Poujadia, n. g., for *P. claricostella*, Accra, *sepicostella*, *ochridorsella*, *spurcella*, *erodella*, n. spp., Ind. or.; RAGONOT, Nouv. Phycit. p. 42.

Baroda, n. g., for *B. paucigraphella*, n. sp., Ind. or.; RAGONOT, Nouv. Phycit. p. 42.

Goya, n. g., for *G. albinella*, Goya, *varicosella*, n. spp., W. Africa; RAGONOT, Nouv. Phycit. p. 43.

Pectinigeria, n. g., for *P. arcticostella*, Zanzibar, *decylderis*, Damaraland, *furvella*, Madagascar, p. 43, *macrella*, *subcarnella*, Natal, p. 44, n. spp.; RAGONOT, Nouv. Phycit.

Saluria magnesiella, Askhabad, *armeniella*, Caucasus, *jordanella*, Goya, *walkerella*, Valparaiso, *cancelliella*, Brazil, RAGONOT, Nouv. Phycit. p. 44; *S. ostreella*, *rostrella*, N. America, *id.* N. Am. Phycit. p. 18 : n. spp.

Ceara, n. g., for *C. discinotella*, n. sp., Brazil; RAGONOT, Nouv. Phycit. p. 45.

Dembea, n. g., for *D. venulosella*, n. sp., Abyssinia; RAGONOT, Nouv. Phycit. p. 45.

Ambala, n. g., for *A. contrastella*, Natal, *fuscostrigella*, Ind. or.; RAGONOT, Nouv. Phycit. p. 45.

Tiarra, n. g., for *T. pusillella*, n. sp., Zanzibar; RAGONOT, Nouv. Phycit. p. 46.

Lykira, n. n., to replace *Selencia*, Rag.; RAGONOT, Nouv. Phycit. p. 46.

Socora, n. g., for *S. tenuicostella*, n. sp., Senegambia; RAGONOT, Nouv. Phycit. p. 46.

Hypsotropa syriacella, Syria, p. 46, *unipunctella*, Amur, *adumbratella*, Natal, p. 47, RAGONOT, Nouv. Phycit.; *H. luteicostella*, Florida, *id.* N. Am. Phycit. p. 19 : n. spp.

Heosphora papuasella, *enervella*, N. Guinea, *leucophlebiella*, Natal, RAGONOT, Nouv. Phycit. p. 47, n. spp.

Talamba, n. g., for *T. tenuinervella*, n. sp., Ind. or.; RAGONOT, p. 47, Nouv. Phycit.

Maliarpha, n. g., for *M. separatella*, n. sp., Cameroons; RAGONOT, p. 48, Nouv. Phycit.

Comorta, n. g., for *C. atricostella*, n. sp., Africa, India; RAGONOT, Nouv. Phycit. p. 48.

Anerastia spinifrontella, Ind. or., *leucoteniella*, Japan, p. 48, *brunneovittella*, *stigmatella*, *bimaculella*, Ind. or., *microchroella*, Goya, p. 48, RAGONOT, Nouv. Phycit., n. spp.

Laurentia, n. g., for *L. inclarella*, n. sp., Java, p. 49; RAGONOT, Nouv. Phycit.

Mampava, n. g., for *M. bipunctella*, n. sp., Sarawak, RAGONOT, Nouv. Phycit. p. 50.

Calera, n. g., for *C. punctilimbella*, N. America, n. sp.; RAGONOT, Nouv. Phycit. p. 50.

Mennuthia, n. g., for *M. nanella*, Zanzibar, n. sp.; RAGONOT, Nouv. Phycit. p. 50.

Tagela, n. g., for *T. clathrella*, Madagascar, *cafrella*, Natal, n. spp.; RAGONOT, Nouv. Phycit. p. 51.

Lamoria fusconervella, Sumatra, *melanophlebia*, Caucasus, p. 51, *rufo-costella*, Taganrog, p. 52; RAGONOT, Nouv. Phycit., n. spp.

Coleoneura, n. g., for *C. lucanorella*, n. sp., Fiji Is.; RAGONOT, Nouv. Phycit. p. 52.

Ciris, n. g., for *C. discigerella*, p. 17, *lativittella*, p. 18, n. spp., Arizona, RAGONOT, N. Am. Phycit.

Ragonotia, n. g., for *Ciris discigerella*, Rag.; GROVE, p. 75, Canad. Ent. xx.

Martia, n. g., for *M. arizonella*, n. sp., N. America ; RAGONOT, p. 18, N. Am. Phycit.

Aurora, n. g., for *A. longipalpella*, n. sp., N. America ; RAGONOT, p. 18, N. Am. Phycit.

Narasola, n. g., for *N. hebetella*, n. sp., N. America ; RAGONOT, p. 18, N. Am. Phycit.

Peoria, n. g., for *P. bipartitella*, n. sp., N. Carolina ; RAGONOT, p. 19, N. Am. Phycit.

Bandera, n. g., for *B. subluteella*, n. sp., N. America ; RAGONOT, N. Am. Phycit. p. 19.

B. cupidinella, Colorado, HULST, Ent. Am. iv, p. 118, n. sp.

Statina, n. g., for *S. roseotinctella*, n. sp., Florida ; RAGONOT, p. 19, N. Am. Phycit.

S. rhodobaphella, N. Guinea, RAGONOT, Nouv. Phycit. p. 50, n. sp.

Tampa, n. g., p. 19, for *T. dimidiatella*, n. sp., Florida, p. 20 ; RAGONOT, N. Am. Phycit.

Ctenochroa, n. g., for *C. californiella*, *inspergella*, *puricostella*, n. spp., N. America ; RAGONOT, N. Am. Phycit. p. 20.

Diatraea, characters of the genus ; FERNALD, Ent. Am. iv, p. 119.

D. alleni, *differentialis*, N. America, FERNALD, Ent. Am. iv, p. 120, n. spp.

Orocrambus mylites, New Zealand, MEYRICK, Tr. N. Z. Inst. xx, p. 67, n. sp.

Crambi of Norway, notes on ; BAKER, Ent. M. M. xxiv, pp. 267 & 268. *Crambus exsiccatus*, Zell., habits, life-history, &c., OSBORN, in Riley Rep. 1887, pp. 154-160. *C. fascellinus*, food plant of ; BARRETT, Ent. M. M. xxv, p. 138. *C. italellus*, fully described, p. 9, figured, pl. i, fig. 9 ; COSTA, Atti Acc. Napoli (2) i, No. 10. *C. sazonellus*, Z., n. var. *carentellus* ; CHRISTOPH, p. 311, Hor. Ent. Ross. xxii. *C. biradiellus*, figured and redescribed ; MABILLE, Miss. Sci. Cap Horn, vi, p. 33. pl. iii, fig. 9.

C. divisellus, Beyrout, JOANNIS, p. 273, pl. vi, fig. 4, Ann. Soc. Ent. Fr. (6) viii ; *C. vallicolellus*, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 60 ; *C. argentiistrigellus*, Algeria, RAGONOT, p. 279, pl. vi, fig. 9, Ann. Soc. Ent. Fr. (6) viii ; *C. aurivittatus*, Darjiling, MOORE, Desc. Ind. Lep. p. 226 ; *C. ulæ*, Colorado, COCKERELL, Ent. M. M. xxiv, p. 272, n. sp. (but *op. cit.* xxv, p. 92, it is sunk as being *C. luteolellus*, Clem.) ; *C. heliotes*, *isochylus*, New Zealand, MEYRICK, p. 68, Tr. N. Z. Inst. xx : n. spp.

Tauroscopa, n. g., for *T. gorgopis*, n. sp., New Zealand ; MEYRICK, p. 69, Tr. N. Z. Inst. xx.

Diptychophora harmonica, New Zealand, MEYRICK, Tr. N. Z. Inst. xx, p. 71, n. sp.

Epichilo, n. g., for *E. parvulus*, n. sp., E. India ; RAGONOT, p. 278, Ann. Soc. Ent. Fr. (6) viii.

Chilo decorellus, Zinck., is a *Crambus*, and = (*Cr. polyactinellus*, Zell., *Cr. goodellianus*, Gr., and *Cr. bonusculalis*, Hulst.) ; FERNALD, Ent. Am. iv, p. 44. *Chilo plejodellus*, Zinck., = (*oryzcellus*, Riley, and *Diphrys prolatella*, Grote) ; *id. t. c.* p. 45.

Schaenobius : the N. American species tabulated and described, with critical and synonymical remarks ; FERNALD, Ent. Am. iv. pp. 135-139.

S. brunneascens, Calcutta, MOORE, Desc. Ind. Lep. p. 225, n. sp.

Eromene tripunctata, Darjiling, MOORE, Desc. Ind. Lep. p. 226, n. sp.

Hednota : to this are referred *Gesneria floricolens* and *Scotomera hydrophila*, Butl. ; MEYRICK, Tr. E. Soc. 1888, p. 242.

H. ozyptera, Hawaiian Is., MEYRICK, Tr. E. Soc. 1888, p. 243, n. sp.

TORTRICIDÆ.

[*Cf.* BAKER (36), CHRISTOPH (151), CONSTANT (161), HOWARD (754), JOURDHEUILLE (426), MEYRICK (584), MOORE (611), OBERTHUR (629), RAGONOT (704, 705), RAMIREZ (710), WALLENGREN (906), WARREN (910).]

Palæotoma styphelana, Meyr., habits ; OLLIFF, P. Linn. Soc. N.S.W. (2) iii, p. 424.

Proselena lozias, New Zealand, MEYRICK, p. 74, Tr. N. Z. Inst. xx, n. sp.

Cateremna terebrella, Zk., habits of ; BARRETT, Ent. M. M. xxv, p. 109.

Argyrolepis maritimana, a valid species, its characters ; BARRETT, Ent. M. M. xxiv, p. 219. *A. zephyrana*, Tr., note on ; FLETCHER, *op. cit.* xxv, p. 15.

Teras latifasciana, Haw., note on ; WARREN, Ent. M. M. xxv, p. 8.

Tortrix fraternana, Haw., = (*proximana*, H.-S.) ; WARREN, Ent. M. M. xxv, p. 6. *T. fractivittana*, Clem., swarming for one night ; *Ins. Life*, i, p. 90.

T. luticostana, Wladiwostok, CHRISTOPH, p. 311, Hor. Ent. Ross. xxii, n. sp.

Amphysa (*Tortrix*) *joannisiana*, Marseilles, RAGONOT, p. 283, pl. vi, fig. 13, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Cerace perdicina, Darjiling, p. 279, MOORE, Desc. Ind. Lep., n. sp.

Topadusa, n. g., for *T. sanguinea*, n. sp., Darjiling ; MOORE, Desc. Ind. Lep. p. 289.

Xanthosetia innotatana, India, WARREN, P. Z. S. 1888, p. 337, n. sp.

Isonomeutis, n. g., for *I. amauropa*, n. sp., New Zealand ; MEYRICK, p. 75, Tr. N. Z. Inst. xx.

Heterocrossa exochana, *eriphylla*, New Zealand, MEYRICK, p. 76, Tr. N. Z. Inst. xx, n. spp.

Olinulia ulmana, notes on the larva of ; WARREN, Ent. M. M. xxiv, p. 230.

Cochyliis ostrinana, Guen., is the same as *purpuratana*, H.-S., p. 43, figured, pl. vi, fig. 34 ; OBERTHUR, Études d'Ent. xii. *C. aeneana*, habits noticed ; JOURDHEUILLE, Ann. Soc. Ent. Fr. (6) viii, p. 63. *C. dilucidana*, life history ; SHELDON, Ent. xxi, p. 103.

Conchyliis lambessana, Algeria, BAKER, Ent. M. M. xxiv, p. 254 ; *C. clavana*, p. 164, pl. iv, figs. 4 & 4a, *leucanthana*, p. 166, pl. iv, fig. 5, Alpes Maritimes, CONSTANT, Ann. Soc. Ent. Fr. (6) viii : n. spp.

Retinia posticana, descriptive note ; WARREN, Ent. M. M. xxv, p. 146.

Phthæochrou rugosana, var. of larva from Algeria described ; CHRÉTIEN, Le Nat. (2) ii, p. 91.

P. nyrtana, Tunis, RAGONOT, p. lxxxviii, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Penthina pyrolana, note on characters, p. 64, synonymy, p. 68; JOURDHEUILLE, Ann. Soc. Ent. Fr. (6) viii.

Antithesia ustulana, Haw., habits of larva; BIRD, Ent. M. M. xxv, p. 92.

Lobesia permirtana, habits, food plant, &c.; WOOD, Ent. M. M. xxv, p. 66.

Coccyx distinctana, habits of; BARRETT, Ent. M. M. xxv, p. 137.

Stigmonota leplastriana, habits of larva; BARRETT, Ent. M. M. xxiv, p. 220.

Catoptria candidulana, larva described; BARRETT, Ent. M. M. xxiv, p. 221.

Grapholitha nigricana, habits of; BARRETT, Ent. M. M. xxv, p. 137.

G. bleuseana, Lambessa, OBERTHUR, Études d'Ent. xii, p. 42, pl. vi, fig. 24; *G. incinerana*, Alpes Maritimes, p. 167, pl. iv, fig. 6, *fulvotriganella*, Corsica, p. 168, pl. iv, fig. 7, CONSTANT, Ann. Soc. Ent. Fr. (6) viii; *G. sulphurana*, Sarepta, CHRISTOPH, p. 311, Hor. Ent. Ross. xxii; *G. lobiferana*, Darjiling, MOORE, Desc. Ind. Lep. p. 280 : n. spp.

Strepsicrates, n. g., for *Strepsiceros*, MEYR. olim, with *S. charopa*, *parthenia*, n. spp., New Zealand; MEYRICK, p. 73, Tr. N. Z. Inst. xx.

Carpocapsa saltitans, metamorphoses, habits, food plant; RAMIREZ (710). *C. pomonella*, L., description, distribution, habits and natural history, food plants, enemies, ravages, remedies; HOWARD, in Riley Rep. 1887, pp. 88-115, pl. ii.

Phthoroblastis purpureana, Alpes Maritimes, CONSTANT, p. 169, pl. iv, fig. 8, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Phozopteryx derasana, life history; SHELDON, Ent. xxi, p. 102. *P. complana*, Fröl., parasites of; WEED, Ent. Am. iv, pp. 149-152.

TINEIDÆ.

[Cf. BAKER (35, 36), BEUTENMÜLLER (64), CHAPMAN (140), CHRÉTIEN (146), CHRISTOPH (151), CONSTANT (161), DRUCE (206), HOFFMANN (380, 381), JOANNIS (422), JOURDHEUILLE (426), MABILLE (537), MEYRICK (585, 588), MOORE (611), OBERTHUR (629), OLLIFF (632), PAGENSTECHER (653), RILEY (759), STANTON (860, 861, 862), STANDFUSS (864), WALSHINGHAM (908, 909), WARREN (910).]

A Tineid, parasitic in hair of *Edentula*; Psyche, v, p. 47.

Simasthis regularis, Pag., description supplemented; PAGENSTECHER, p. 121, Verz. Lep. Amb.

S. atrosignata, Amurland, CHRISTOPH, p. 311, Hor. Ent. Ross. xxii; *S. microlitha*, p. 84, *marmorea*, *symbolæa*, p. 85, New Zealand, MEYRICK, Tr. N. Z. Inst. xx : n. spp.

Solenobia triquetrella, note on habits; RÜHL, Soc. Ent. ii, p. 172.

Talacorporia pseudobombycella, Hb., note on habits; RÜHL, Soc. Ent. ii, p. 154.

Scoriodyla, n. g. (*Lyprusidæ*), p. 101, for *S. conisalia*, n. sp., New Zealand, p. 102; MEYRICK, Tr. N. Z. Inst. xx.

Mallobathra, n. g. (*Lypusidae*), for *M. crataea*, p. 102, *metrosema*, *wiphanes*, p. 103, n. spp., New Zealand; MEYRICK, Tr. N. Z. Inst. xx.

Pronuba yuccasella, habits; MEEHAN, P. Ac. Phil. 1888, pp. 274-276.

Titanomis, n. g. (*Anaphoridae*), for *T. sisyrota*, n. sp., New Zealand. MEYRICK, p. 104, Tr. N. Z. Inst. xx.

Acrolophus mexicanellus, Mexico City, BEUTENMÜLLER, Ent. Am. ix. p. 29, n. sp.

Pseudanaphora arcanella, ♀ noticed; BEUTENMÜLLER, Ent. Am. ix. p. 29.

Endophthora, n. g. (*Tineidae*), p. 93, for *E. omogramma*, *pharotoma mesotypa*, p. 94, *agriopa*, p. 95, n. spp., New Zealand; MEYRICK, Tr. N. Z. Inst. xx.

Sagephora, n. g. (*Tineidae*), p. 95, for *S. phortegella*, n. sp., New Zealand. p. 96; MEYRICK, Tr. N. Z. Inst. xx.

Blabophanes ferruginella, habits and metamorphoses; CHRÉTIEN, La Nat. (2) ii, p. 229.

B. ornithias, New Zealand, MEYRICK, p. 97, Tr. N. Z. Inst. xx, n. sp. *Tinea granella*, habits; BARRETT, Ent. M. M. xxiv, p. 212. *T. tapeiella*, L., = (*palaestrica*, Butl.) ; MEYRICK, p. 98, Tr. N. Z. Inst. xx.

T. grammocosma, p. 98, *belonota*, p. 99, *mochlota*, p. 100, New Zealand. MEYRICK, p. 98, Tr. N. Z. Inst. xx; *T. fulgens*, Borshom, *severella* (Z. in lit.), Sarepta, CHRISTOPH, p. 312, Hor. Ent. Ross. xxii; *T. galeatella*, Orange Bay, MABILLE, Miss. Sci. Cap Horn, vi, p. 34, pl. iii, fig. 10 n. spp.

Davendra flavibasa, Darjiling, MOORE, Desc. Ind. Lep. p. 281, n. sp.

Tozaliba umbripennis, Darjiling, MOORE, Desc. Ind. Lep. p. 281, n. sp.

Euplocamus violaceus, Schahrud, CHRISTOPH, p. 312, Hor. Ent. Ross. xxii; *E. strigosa*, Darjiling, MOORE, Desc. Ind. Lep. p. 281 : n. sp.

Atteva pulchella, India ♀, MOORE, Desc. Ind. Lep. p. 282, n. sp.

Sippharara woodfordi, Solomon Is., DRUCE, P. Z. S. 1888, p. 579, pl. xxi fig. 8, n. sp.

Incurvaria solenobiella, ♂ characters, p. 146, *acerifoliella*, Fitch noticed, p. 147; *I. mediastriatella*, Clem., = (*Lecithocera* ? *flavistrigella* Wlsm.), p. 147; WALSINGHAM, Ins. Life, i.

I. punctiferella, p. 145, *politella*, *humilis*, p. 146, *ænescens*, p. 147 N. America, WALSINGHAM, Ins. Life, i, n. spp.

Nemophora panzerella, habits of young larvæ; CHRÉTIEN, p. lxxxv Bull. Soc. Ent. Fr. (6) viii.

Adela hedemanni, *basiradiella*, Amurland, CHRISTOPH, p. 312, Hor. Ent. Ross. xxii; *A. atkinsonii*, Darjiling, MOORE, Desc. Ind. Lep. p. 282; *A. latifasciella*, India, WARREN, P. Z. S. 1888, p. 338 : n. spp.

Nemotois fasciellus, habits; STAINTON, Ent. M. M. xxiv, p. 231.

N. constantinella, Algeria, BAKER, Ent. M. M. xxiv, p. 255, n. sp.

Hyponomeutes malinella, &c., oviposition and habits; CHRÉTIEN (146)

Hyponomeuta brunnescens, Darjiling, MOORE, Desc. Ind. Lep. p. 282

H. millepunctatellus, India, WARREN, P. Z. S. 1888, p. 338 : n. spp.

Lysiphragma, n. g. (*Hyponomeutidae*), p. 104, for *L. microchlora*, *epixyia* n. spp., p. 105, New Zealand; MEYRICK, Tr. N. Z. Inst. xx.

Atemilia torquatella, habits of larva; HERMS, S. E. Z. xlix, p. 81.

Prays curtisellus and *rustica*, seasonal variation, habits, &c. ; CHAPMAN, Ent. M. M. xxv, pp. 73-76.

Cerostoma and allies, variation in neurulation of ; WALSINGHAM (909).

Compnistis, n. g. (*Plutellidæ*), p. 89, for *Gelechia bifaciella*, Walk. ; MEYRICK, p. 90, Tr. N. Z. Inst. xx.

Eidophasia concinnella, Borshom, CHRISTOPH, p. 313, Hor. Ent. Ross. xxii, n. sp.

Paecadiu chrysopyga, Z., note on ; JOURDHEVILLE, Ann. Soc. Ent. Fr. (6) viii, p. 65. *P. zelleriella*, Chamb., (= *H. texanella*, id.) and *discostrigella*, Chamb., (= *subcærulea*, Wlsm.) ; WALSINGHAM, Ins. Life, i, p. 149.

P. obscurella, California, BEUTENMÜLLER, Ent. Am. iv, p. 29 ; *P. marmorea*, p. 149, *fuscipedeella*, p. 150, N. America, WALSINGHAM, Ins. Life, i : n. spp.

Enœmia caminœa, Meyr., larva and pupa noticed, p. 361, figured, pl. xx, figs. 5 & 5a ; OLLIFF, Ann. N. H. (6) i.

Depressaria heracleana, life history, synonymy, &c. ; RILEY, Ins. Life, pp. 94-98, fig. 13.

D. aspersella, Alpes Maritimes, CONSTANT, p. 170, pl. iv, fig. 9, Ann. Soc. Ent. Fr. (6) viii ; *D. subnervosa*, Lambessa, p. 42, pl. vi, fig. 27, OBERTHUR, Études d'Ent. xii ; *D. imbutella*, Borshom, CHRISTOPH, p. 313, Hor. Ent. Ross. xxii : n. spp.

Leptosacea, n. g. (*Depressariidæ*), p. 77, for *L. callizyla*, n. sp., New Zealand, p. 78 ; MEYRICK, Tr. N. Z. Inst. xx.

Gonionota pyrobola, Meyr., larva and pupa described, p. 361, figured, pl. xx, figs. 7 & 7a ; OLLIFF, Ann. N. H. (6) i.

Cryptolechia concolorella, Nevada, BEUTENMÜLLER, Ent. Am. iv, p. 30, n. sp.

Gelechia peliella, Tr., notes on larva ; WARREN, Ent. M. M. xxv, p. 161. *G. marmorea*, Haw., food-plant ; FLETCHER, t. c. p. 65. *G. rhombelliformis*, occurrence in Germany ; HERMS, S. E. Z. xlix, p. 82.

G. algeriella, Lambessa, BAKER, Ent. M. M. xxiv, p. 255 ; *G. saharae*, Algeria, OBERTHUR, Études d'Ent. xii, p. 44, pl. vi, fig. 34 : n. spp.

Litu pseudolella, Sarepta, CHRISTOPH, p. 313, Hor. Ent. Ross. xxii, n. sp.

Teleia (sub *Tinea*) *decorella*, Haw., = *humeralis*, Hein. ; WARREN, Ent. M. M. xxv, p. 7.

T. omachella, Algeria, OBERTHUR, Études d'Ent. xii, p. 43, pl. vi, fig. 28, n. sp.

Nannodiu knockella, Haw., = (*naviferella*, Dup.) ; WARREN, Ent. M. M. xxv, p. 8.

Ergatis mirabilis, Sarepta, CHRISTOPH, p. 314, Hor. Ent. Ross. xxii, n. sp.

Parusia obsoleta, Schahkuh, CHRISTOPH, p. 313, Hor. Ent. Ross. xxii, n. sp.

Dactylota snellenella, Arizona, WALSINGHAM, Ins. Life, i, p. 84, n. sp.

Tachyptilia mauricauella, Lambessa, OBERTHUR, Études d'Ent. xii, p. 43, pl. vi, fig. 34, n. sp.

Cleodora pullidistrigella, Chamb., note on ; WALSINGHAM, Ins. Life, i, pp. 82 & 83.

C. constantina, Algeria, BAKER, Ent. M. M. xxiv, p. 255; *C. molitor*, *canicostella*, p. 82, *tophella*, *sabulella*, p. 83, California, WALSINGHAM, *Ins. Life*, i : n. spp.

Ypsolophus schmidtellus, Heyd. (*Nothris durdhamellus*, Stn.), larva described; BAKER, p. 136, BARRETT, p. 137, Ent. M. M. xxv.

Anarsia lineatella, Clem., its ravages and parasite; HOWARD (401).

Pleurota staintoniella, p. 119, *mauretanica*, *oranella*, p. 120, Algeria, BAKER, Tr. E. Soc. 1888, n. spp.

Holoscolia forficella, Hb., biting habits of; FUNKE, Soc. Ent. 2, p. 179.

Epiphthora, n. g. (*Gelechiade*), for *E. melanombra*, n. sp., New Zealand; MEYRICK, p. 77, Tr. N. Z. Inst. xx.

Ereunetis technica, New Zealand, MEYRICK, p. 92, Tr. N. Z. Inst. xx, n. sp.

Erechthias melanotricha, New Zealand, MEYRICK, p. 93, Tr. N. Z. Inst. xx, n. sp.

Peltophora amenena, New Zealand, MEYRICK, Tr. N. Z. Inst. xx, p. 75, n. sp.

Semiozoma mystis, *apodoza*, p. 79, *platyptera*, p. 80, New Zealand, MEYRICK, Tr. N. Z. Inst. xx, n. spp.

Gymnobraitha habropis, p. 80, *omphalota*, p. 81, New Zealand, MEYRICK, Tr. N. Z. Inst. xx, n. spp.

Philobota bimaculana, Don., larva and pupa noticed, p. 360, figured, pl. xx, figs. 6 & 6b; OLLIFF, Ann. N. H. (6) i.

Chrophora trigutta, Borshom, *caeruleopicta*, Suchum-Kalé, CHRISTOF, p. 314, Hor. Ent. Ross. xxii; *Ch. thoracella*, p. 147, *dimidiella*, *coloradella*, p. 148, N. America, WALSINGHAM, *Ins. Life*, i; *Ch. politis*, New Zealand; MEYRICK, Tr. N. Z. Inst. xx, p. 81 : n. spp.

Cremnogenes siderota, New Zealand, MEYRICK, Tr. N. Z. Inst. xx, p. 82, n. sp.

Themiscyra latifera, Wlk., *Cyptasia egregiella*, Wlk., *cristata*, Butl., referred to *Tineina*; MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 928.

Enchocrates phaedryntis, *soreutis*, p. 929, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Lepidotarsa: *Piloprepes iriodes*, Meyr., referred to this, the species tabulated; MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 930.

L. leucodetis, *proteis*, W. Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 931, n. spp.

Eochrois archescia, W. Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 932, n. sp.

Eomystis, n. g., for *E. rhodopis*, n. sp., W. Australia; MEYRICK, p. 932, P. Linn. Soc. N.S.W. (2) ii.

Heliocausta rhodorantha, p. 933, *mimica*, *crococantha*, p. 934, *phylloceps*, p. 935, *acmaea*, *sarcophanes*, p. 936, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Euchaetis, Meyr., characters supplemented; MEYRICK, P. Linn. Soc. N.S.W. (2) ii, p. 937.

E. rhizobola, p. 937, *iospila*, *endoleuca*, p. 938, *poliarcha*, p. 939, *haloclera*, p. 940, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Hoplitica metriopis, *liosarca*, p. 941, *colonius*, p. 942, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Eulekhria camelæu, p. 943, *ichneutu*, *pelodora*, p. 944, *menodes*, p. 945, *eriphila*, *aphaura*, p. 946, *autophylla*, *homoteles*, p. 947, *heliocoma*, *heliocora*, *malacoptera*, p. 948, *cephalanthes*, *eocrossa*, p. 949, *amphidyas*, *ophthalmus*, *mesophragma*, p. 950, *graphica*, p. 951, *delotis*, *xanthostephana*, p. 952, *gonosema*, p. 953, *hemicarpa*, *epiphragma*, p. 954, *schalidota*, *tropica*, p. 955, *phæostephes*, p. 956, *elaeota*, *cutaplanta*, p. 957, *callimeris*, p. 958, *xanthocrossa*, *glaphyrotu*, p. 959, *archepeda*, *mochlastis*, p. 960, *diagramma*, *athletis*, p. 961, *irenaea*, *hyperchlora*, p. 962, *cholerodes*, *halmopedu*, p. 963, *callisceptru*, *phæosceptru*, p. 964, *thrincotis*, *homoxesta*, *homochulca*, p. 965, *cynoptera*, p. 966, Australia, MEYRICK, P. Linn. Soc. N.S.W. (2) ii, n. spp.

Heliostibes, Zell., position noticed, p. 82; *Atychia illita*, Feld., and *Tachyptilia atychioides*, Butl., referred to it and redescribed, p. 83; MEYRICK, Tr. N. Z. Inst. xx.

Glyphipteryx zelota, *acronoma*, p. 86, *leptosema*, *nephoptera*, p. 87, New Zealand, MEYRICK, Tr. N. Z. Inst. xx, n. spp.

Phryganostola aturacta, New Zealand, MEYRICK, Tr. N. Z. Inst. xx, p. 88, n. sp.

Circica, n. g. (*Glyphipterygidae*), for *C. cionophora*, p. 88, *x-stobela*, p. 89, n. spp., New Zealand; MEYRICK, Tr. N. Z. Inst. xx.

Pantaspenna, n. g. (*Glyphipterygidae*), for *P. holochalca*, n. spp., New Zealand; MEYRICK, p. 89, Tr. N. Z. Inst. xx.

Gravilaria eximiella, Lenkoran, CHRISTOPH, p. 413, Hor. Ent. Ross. xxii; *G. sanguinella*, *nigristrigella*, *ruptistrigella*, *shastella*, N. America, BEUTENMÜLLER, Ent. Am. iv, p. 30 : n. spp.

Coleophora inula, Wocke, note on; JOURDHEVILLE, p. 66, Ann. Soc. Ent. Fr. (6) viii. *C. thevinella*, habits of larva; MACHIN, Ent. xxi, p. 15. *C. frischella*, L., = (*melilotella*, Scott); BANKES, Ent. M. M. xxv, pp. 1-4. *C. craccella*, Vallot, = (*lugduniella*, auct.) ; CHRÉTIEN, Le Nat. (2) ii, pp. 262 & 263.

C. potentillæ, Boyd i. litt., England, STAINTON, Ent. M. M. xxiv, p. 231; *C. pechi*, *dubiella*, Algeria, BAKER, t. c. p. 256 : n. spp.

Douglasia ocnerosatomella, larva described; HERMS, S. E. Z. xlix, p. 82.

Butalis siccella, habits in Dorsetshire, larva described; BANKES, P. Dorset N. H. Club, ix, pp. 118-122. *B. siccella*, *variella*, larvæ described; id. Ent. M. M. xxiv, pp. 246-248. *B. laminella*, H. S., in Britain; FLETCHER, op. cit. xxv, p. 15 : larva described; BANKES, t. c. p. 16. *B. impositella*, Z., = (*matutella*, Clem., and *Gel. monstratella*, Walk.), p. 113; *B. basilaris*, Z., = (*flarifrontella*, Clem.), p. 114; *B. aterrimella*, Walk., redescribed, p. 115; WALSHINGHAM, Ins. Life, i. *B. parvella*, H. S., p. 328, figs. 1 a-e, *seliniella*, Z., p. 339, figs. 2 a-e, *senescens*, St., p. 340, figs. 3 a-g, *palustris*, Z., p. 341, figs. 4 a-f, *laminella*, H. S., p. 342, figs. 5 a-g, *fallabella*, Schl., p. 343, figs. 8 a-d, *fuscocuprea*, Hw., p. 345, figs. 6 a-d, *fuscocœnea*, Hw., p. 345, figs. 7 a & b, male organs described and figured on pl. i; HOFFMANN, S. E. Z. xlix.

B. suffusa, *perspicillella*, p. 114, *ochristiata*, p. 115, California, *alb. lineatu*, Arizona, p. 116, WALSHINGHAM, Ins. Life, i, n. spp.

Atrotura, n. g., p. 116, fig. 22, for *A. ebernea*, n. sp., Arizona, p. 117 ; WALBINGHAM, *Ins. Life*, i.

Cosmopteryx sorbaiella and *lienigiella*, habits of larvæ ; HERMS, S. E. Z. xlix, p. 82.

Staintonia medinella discovered in Sardinia ; COSTA, *Atti Acc. Napoli* (2) i, No. 9, p. 40.

Elachista pullella, H. S. (n. sp. ?), habits of larva ; HERMS, S. E. Z. xlix, p. 83.

Lithocolletis platani, Stgr., habits noticed ; RAGONOT, p. cxiii, *Bull. Soc. Ent. Fr.* (6) viii.

Bucculatrix turatii, Standf., note on ; CAMUS, *Feuill. Nat.* xviii, p. 35 : described at length ; STANDFUSS, B. E. Z. xxxii, p. 244.

Opostega salaciella, Tr., habits of ; WARREN, *Ent. M. M.* xxv, p. 145.

Nepticula serella, Britain, STANTON, *Ent. M. M.* xxiv, p. 260 ; *N. fulgens*, Britain, *id. op. cit.* xxv, p. 12 : n. spp.

Mnesarchæa loxoscia, p. 90, *hamadelphe*, p. 91, New Zealand, MEYRICK, *Tr. N. Z. Inst.* xx, n. spp.

Palæomicra zonodoxa, p. 91, *dorozena*, p. 92, New Zealand, MEYRICK, *Tr. N. Z. Inst.* xx, n. spp.

Micropteryx salopiella, note on ; BARRETT, *Ent. M. M.* xxiv, p. 213. *M. berytella* redescribed, p. 274, figured, pl. vi, fig. 5 ; JOANNIS, *Ann. Soc. Ent. Fr.* (6) viii.

PTEROPHORIDÆ, ALUCITIDÆ.

[*Cf.* MEYRICK (580), MOORE (611).]

Platyptilia gonodactyla, notes on the life history of the second brood of, and on the variation in the early stages of ; TUTT, *Ent. M. M.* xxv, pp. 104–107.

P. rhynchophora = (*repletalis*, Butl., *nec* Wlk.), p. 239, *brachymorpha*, p. 240, Hawaiian Is. ; MEYRICK, *Tr. E. Soc.* 1888, n. spp.

Amblyptilia cosmodactyla, Butl., referred to *Platyptilia* ; MEYRICK, *Tr. E. Soc.* 1888, p. 240.

Pterophorus heterodactylus, Haw., = (*teucarii*, Green) ; MASON, *Ent. M. M.* xxv, p. 162.

Acipitilia hawaiiensis, Butl., referred to *Trichoptilus* ; MEYRICK, *Tr. E. Soc.* 1888, p. 239.

Alucita sikkima, Darjiling, MOORE, *Desc. Ind. Lep.* p. 282, n. sp.

(D.) DIPTERA.

[*Cf.* AURIVILLIUS (31), BECKER (50, 51), BELING (54), BERGROTH (58, 59, 60), BIGOT (66, 67, 68, 69, 70, 71, 72), BRANDT (99), BRISCHKE (108), BÜTSCHLI (120), COSTA (164), CUCCATI (172), GIRSCHNER (314), HENKING (370), HUGUENIN (403), INCHBALD (408), KIEFFER (437, 438), KIRBY (439), KOWARZ (455), LAMPA (490), LINDEMAN (514, 515), LÖW (523, 524), LUCAS (529), MACLOSKIE (548), MASKELL (558), MATAS (562), MEADE (565, 566, 567), MEINERT (577, 578), MIK (598, 599, 600, 601, 602, 603, 604, 605, 606), PANDELLÉ (655), RASCHKE (711), REES (717), RILEY (755, 761), RÜDER (772, 773, 774, 775), SCHNABL (809, 810, 811, 812), SENTENIS (845), SKUSE (841, 842), STEIN (869, 870), TRAIL (886), VERRALL (896, 897), VOELTZKOW (899), WACHTL (900), WILLISTON (931, 932, 933, 934, 935, 936), WULF (319, 941).]

Table of the families; WILLISTON (931).—Hermaphrodites; MIK, Wien. ent. Z. vii, pp. 141 & 182.—Emendations to "Verzeichniss der Artennamen, welche in Schiner's Fauna austriaca enthalten sind"; MIK (600).

CECIDOMYIIDÆ.

Miastor procaz, p. 56, *mastersi*, p. 59, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Cecidomyiida, galls of on *Silene nutans*, L., *Phyteuma michelii*, Bertol., *Lotus corniculatus*, L., *Polygonatum* (*Convallaria*) *multiflorum*, L., described and figured; MIK, Wien. ent. Z. vii, pp. 311-316, pl. iv.

Cecidomyid mycophagous larva noticed; LÖW, Verh. z.-b. Wien, xxxviii, p. 246.

Cecidomyia destructor, notes on; J. Micr. & Nat. Sci. (n.s.) i, pp. 12-16: ravages in 1888; ORMEROD, Rep. xii, pp. 48-52: parasites, &c.; RILEY (761): new parasite of; FORBES (279): parasites of in Britain; ENOCK, Ent. xxi, p. 202: occurrence of on *Phleum pratense* and *Triticum repens*; LINDEMAN, Ent. Nachr. xiv, p. 242: remarks on in America; RILEY, Ins. Life, i, pp. 107 & 108: evidence as to its introduction to N. America discussed; RILEY (755): in New Zealand; Ins. Life, i, p. 32. *C. nigra*, Meig., note on; BLOOMFIELD, Ent. M. M. xxiv, p. 273. *C. pilosellæ*, Binnie, p. 110, and *rosarum*, Hardy, p. 111, descriptive notices of; KIEFFER, Verh. z.-b. Wien, xxxviii. *C. affinis*, Kieff., *beckiana*, Mik, p. 236, *circinans*, Gir., *euphorbiæ*, Lw., *gallii*, Lw., *galiicola*, Lw., p. 237, *salicis*, Schrk., *sonchi*, Lw., *violæ*, Lw., p. 238, notes on the insects and their galls; LÖW, t. c. *C. genisticola*, Lw., p. 312, *galeobdolonis*, Winn., *raphanistri*, *salicariæ*, p. 313, and *viscariæ*, Kieff., p. 314, notes on; KIEFFER, Ent. Nachr. xiv.

C. heirochloæ, Poltawa, LINDEMAN, Ent. Nachr. xiv, p. 50; *C. lamiicola* (with metamorphoses, &c., pp. 33-35), Salzburg, MIK, Wien. ent. Z. vii, p. 35, pl. i; *C. thomastiana* galls on *Tilia parvifolia*, p. 95, *salicaria* on *Lythrum salicaria*, p. 96, *scabiosæ* on *S. columbaria*, L., *taraxaci* on *T. officinale*, Wigg., p. 98, *thymi*, p. 100, *thymicola*, p. 102, *vicie* on *V. sepium*, L., p. 105, Thuringia, *lotharingiæ*, Bitsch, on *Cerastium*, p. 107, KIEFFER, Verh. z.-b. Wien, xxxviii; *C. floriperda* galls on *Silene inflata*, in Austria, p. 231, *similis* galls on *Veronica scutellata*, at Bitsch, p. 232, LÖW, t. c.; *C. acericrispans*, Germany, p. 266, *compositarum*, p. 310, *genistamitorquens*, p. 311, Bitsch, KIEFFER, Ent. Nachr. xiv; *C. vitulans*, *difficilis*, p. 63, *regilla*, p. 64, *baccata*, p. 65, *nobilis*, p. 66, *gubbula*, p. 67, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Gonioclema, n. subg. of *Cecidomyia*, p. 60, for *G. paucicollula*, n. sp., Australia, p. 61; SKUSE, P. Linn. Soc. N.S.W. (2) iii.

Neorophlebia, n. subg. of *Cecidomyia*, for *N. volitans*, n. sp., Australia; SKUSE, P. Linn. Soc. N.S.W. (2) iii, p. 111.

Chastomera, n. subg. of *Cecidomyia*, for *C. bella*, n. sp., Australia; SKUSE, P. Linn. Soc. N.S.W. (2) iii, p. 112.

Colpodia indubitata, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii, n. sp.

Aphondylia hornigi, Wechtl., and *verbasci*, Wall., notes on; LÖW, Verh. z.-b. Wien, xxxviii, pp. 239 & 240. *A. helianthiglobulus* described; MARTEN, Psyche, v, p. 102.

A. prunorum, Europe, WACHTL, Wien. ent. Z. vii, p. 205; *A. bitensis*, Bitsch, KIEFFER, p. 264, Ent. Nachr. xiv; *A. loewi*, p. 108, *rubicunda*, p. 109, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Diplosis pravor, Winn., p. 244, *lonicerarum*, Lw., p. 245, *mosellana*, Geh., = (*aurantiaca*, Wag.), pp. 245-249, notes on; KIEFFER, Ent. Nachr. xiv. *D. steini*, note on the transverse vein in wing of; LÖW, Verh. z.-b. Wien. xxxviii, p. 239. *D. pyrrirora*, Riley, habits, description, &c.; MEADE, Ent. xxi, pp. 123-131.

D. frazinella, England, MEADE, Ent. M. M. xxv, p. 77; *D. pulsatillæ*, p. 262, *nasturtii*, p. 263, Bitsch, KIEFFER, Ent. Nachr. xiv; *D. frirenii*, from galls of *D. ramicola*, Rud., on *Tilia grandifolia*, at Metz, *id.* Verh. z.-b. Wien, xxxviii, p. 109; *D. auripes* galls on *Gallium mollugo*, at Stuttgart, p. 233, *quinquenotata* galls on *Hemerocallis fulva*, in Austria, p. 235, LÖW, t. c.; *D. leptospermi*, p. 68, *plumbei*, p. 69, *confinis*, p. 70, *breripennis*, p. 71, *percita*, *scenica*, p. 72, *lucida*, p. 73, *paula*, p. 74, *abbreviata*, *ardens*, p. 75, *cacca*, p. 76, *probuta*, p. 77, *regramlis*, p. 78, *bombycina*, p. 79, *villosa*, p. 80, *fuerta*, p. 81, *adusta*, *araneosa*, p. 82, *obsoleta*, p. 83, *montana*, p. 84, *condigna*, *fallax*, p. 85, *sulfurea*, p. 86, *parilis*, *bellula*, p. 87, *senilis*, p. 88, *rusticula*, p. 89, *furva*, *quasita*, p. 90, *conspecta*, p. 91, *mollipes*, p. 92, *gilva*, *discedens*, p. 93, *erronea*, p. 94, *humilis*, p. 95, *scelesta*, p. 96, *maclearyi*, p. 97, *dibapha*, p. 98, *frequens*, p. 99, *certa*, p. 100, *violacea*, p. 101, *saxatilis*, p. 102, *contigua*, p. 103, *negotiosa*, p. 104, *actiosa*, p. 105, *cineraria*, p. 106, *indotata*, *oreas*, p. 107, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Lasioptera cerealis, descriptive note on the genus and species; INCHBALD & MEADE, Ent. xxi, pp. 193-197, woodcuts.

L. mastersi, p. 127, *rustatrix*, p. 128, *aurata*, p. 129, *nodosæ*, p. 130, *miscella*, *corusca*, p. 131, *helvipes*, p. 132, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Epidosis erythromma, p. 200, *lutescens*, pp. 202 & 314, Bitsch, KIEFFER, Ent. Nachr. xiv : *E. distenta*, p. 115, *magnifica*, p. 116, *gracilis*, p. 117, *opipara*, *conferta*, p. 118, *perezilis*, p. 119, *pollida*, p. 120, *macella*, p. 121, *exigua*, p. 122, *gibberosa*, p. 123, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Asynapta pectoralis, Winn., note on ; KIEFFER, p. 204, Ent. Nachr. xiv.

A. citrina, Bitsch, KIEFFER, p. 243, Ent. Nachr. xiv ; *A. flammula*, p. 124, *prisca*, *parietina*, p. 125, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii : n. spp.

Campylomyza perpallida, p. 134, *æratipennis*, p. 135, *persimilis*, *crocea*, p. 136, *subtilis*, p. 137, *vicina*, p. 138, *impexa*, p. 139, *pellax*, p. 140, *ampli-pennis*, p. 142, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii, n. spp.

MYCETOPHILIDÆ.

The Australian species classified in accordance with the system of Winnertz ; SKUSE, P. Linn. Soc. N.S.W. (2) iii, pp. 1123-1157.

Ditomyia incerta, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 16, n. sp.

Sciophila tristis, p. 13, pl. iii, fig. 2, *calopus*, fig. 3, p. 14, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, n. spp.

Boletina antarctica, p. 12, pl. iii, fig. 1, *obscuriventris*, p. 13, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, n. spp.

B. antarctica, Big., referred to *Glaphyoptera* ; MIK, Wien. ent. Z. vii, p. 141.

(*Gnoriste*, additional note on the species ; *G. trilineata*, Zett., ♀ = (*bilineata*, Zett.) ; BÖDER, Wien. ent. Z. vii, p. 96.

Sciara macleayi, p. 673, *sedula*, p. 674, *sororia*, p. 675, *finitima*, p. 677, *æmula*, p. 678, *luctifica*, p. 680, *frogatti*, p. 681, *frequens*, p. 682, *dolosæ*, p. 683, *festina*, p. 684, *pernitida*, p. 685, *familiaris*, p. 687, *cavatica*, p. 688, *festiva*, p. 689, *mæsta* (sic), p. 691, *aquila*, p. 692, *audax*, p. 693, *recors*, p. 695, *erratica*, p. 696, *approximata*, p. 697, *evanescent*, p. 698, *scitula*, p. 699, *brevifurca*, p. 700, *diversa*, p. 701, *minutula*, p. 702, *atrata*, p. 704, *luculenta*, p. 705, *fumipennis*, p. 706, *unica*, p. 708, *winnertzi*, p. 709, *montivaga*, p. 710, *ornatula*, p. 711, *amabilis*, p. 712, *lucidipennis*, p. 714, *nubicula*, p. 715, *spectabilis*, p. 716, *ignobilis*, p. 717, *infrequens*, p. 719, *notata*, p. 720, *pictipes*, p. 721, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Trichosia mastersi, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii, p. 723, n. sp.

Macroceru delicata, p. 1158, *decorosa*, p. 1159, *mastersi*, p. 1161, Australia, SKUSE, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Ceroplatus mastersi, Australia, SKUSE, p. 1164, P. Linn. Soc. N.S.W. (2) iii, n. sp.

Heteropterna, n. g., p. 1129, and p. 1166, for *H. macleayi*, n. sp., Australia p. 1167 ; SKUSE, P. Linn. Soc. N.S.W. (2) iii.

Platypura venusta, p. 1171, *fenestralis*, p. 1172, *schineri*, p. 1174, *confusus*, p. 1175, *fulva*, p. 1176, *monticola*, p. 1177, *graphica*, p. 1179, Australia; SKUSE, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Pseudoplatypura, n. g., pp. 1130 & 1180, for *P. duar*, n. sp., Australia, p. 1182; SKUSE, P. Linn. Soc. N.S.W. (2) iii.

Antriadophila, n. g., pp. 1130 & 1183, for *A. nubipennis*, p. 1184, *petulans*, p. 1186, *electilis*, p. 1187, *nigra*, p. 1188, Australia, n. spp.; SKUSE, P. Linn. Soc. N.S.W. (2) iii.

Homaspis, n. g., pp. 1131 & 1191, for *H. meridiana*, n. sp., Australia, p. 1192; SKUSE, P. Linn. Soc. N.S.W. (2) iii.

Acrodicrania, n. g., pp. 1135 & 1194, for *A. atricauda*, p. 1195, *setosicauda*, p. 1196, *fasciata*, p. 1198, Australia, n. spp.; SKUSE, P. Linn. Soc. N.S.W. (2) iii.

Ateleia, n. g., pp. 1136 & 1201, for *A. spadicithorax*, n. sp., Australia, p. 1202; SKUSE, P. Linn. Soc. N.S.W. (2) iii.

Trizygia, n. g., pp. 1137 & 1204, for *T. flavipes*, n. sp., Australia, p. 1205; SKUSE, P. Linn. Soc. N.S.W. (2) iii.

Aphelomera, n. g., pp. 1137 & 1206, for *A. sydneyensis*, n. sp., Australia, p. 1207; SKUSE, P. Linn. Soc. N.S.W. (2) iii.

Trichonta vegeta, p. 1209, *illatabilis*, p. 1210, Australia; SKUSE, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Mycetophila propria, Australia, SKUSE, p. 1213, P. Linn. Soc. N.S.W. (2) iii, n. sp.

Brachydicrania, n. g., pp. 1143 & 1215, for *B. pullicauda*, p. 1216, *pietiventris*, p. 1217, *fumosa*, p. 1218, *abbreviata*, p. 1219, n. spp., Australia; SKUSE, P. Linn. Soc. N.S.W. (2) iii.

SIMULIIDÆ and BIBIONIDÆ.

Simulium, sp., habits near New York; HOWARD, *Ins. Life*, i, pp. 99 & 100.

S. anthracinum, *antarcticum*, Cape Horn, BIGOT, *Miss. Sci. Cap Horn*, vi, p. 15, n. spp.

Acanthornemis castanipes, Cape Horn, BIGOT, *Miss. Sci. Cap Horn*, vi, p. 17, n. sp.

CULICIDÆ and CHIRONOMIDÆ.

Culex sp., poison-glands of; MACLOSIE (548).

C. rufinus, Tunis, BIGOT, *Exp. sci. Tun. Dipt.* p. 7, n. sp.

Chironomus sp., occurring in mines; AURIVILLIUS (31). *C. riparius*, *plumosus*, fungoid disease of; GIARD, *Bull. Sci. Nord.* (3) i, p. 299.

C. villosus, Cape Horn, BIGOT, *Miss. Sci. Cap Horn*, vi, p. 3, n. sp.

Ceratopogon hippocastani, Austria (with life-history), MIK, *Wien. ent. Z.* vii, p. 185, pl. ii, n. sp.

Camptocladius nigripictus, Cape Horn, BIGOT, *Miss. Sci. Cap Horn*, vi, p. 2, pl. i, fig. 1, n. sp.

Tanytus pilosus, Cape Horn, BIGOT, *Miss. Sci. Cap Horn*, vi, p. 3, pl. i, fig. 2, n. sp.

ORPHNEPHILIDÆ and PSYCHODIDÆ.

Orphnephila larvata, Tyrolean Alps, MIK, Wien. ent. Z. vii, p. 243, n. sp.
Psychoda dubia, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 4, n. sp.

TIPULIDÆ.

Notes on collecting and setting of; VERRALL, Ent. M. M. xxv, p. 98.
 The *Tipulidæ* of Switzerland monographed; HUGUENIN (403).

Dicranomyia affinis, Schum., = (*osten-sackeni*, Weeth.); BERGROTH, Verh. z.-b. Wien, xxxviii, p. 646.

D. consimilis, Caffraria, BERGROTH, Ent. Tidskr. ix, p. 127; *D. venusta*, p. 193, *rulgata*, p. 194, Sitka, *id.* Wien. ent. Z. vii : n. spp.

Orimarga virgo, Zett., = (*anomala*, Mik); BERGROTH, Verh. z.-b. Wien, xxxviii, p. 646.

Rhipidia afra, Caffraria, BERGROTH, Ent. Tidskr. ix, p. 128, n. sp.

Limnobia longicollis, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 8, pl. ii, fig. 2, n. sp.

Elephantomyia wahlbergi, Caffraria, BERGROTH, Ent. Tidskr. ix, p. 129, n. sp.

Erioptera peringueyi, p. 129, *subaurea*, p. 130, S. Africa, BERGROTH, Ent. Tidskr. ix, n. spp.

Podoneura, n. g., near *Pсилоconopa*, for *P. anthracogramma*, n. sp., Cape Town; BERGROTH, Ent. Tidskr. ix, p. 133.

Rhypholophus phryganopterus, Kol., and *fuscipennis*, Zett., distinguished; BERGROTH, Verh. z.-b. Wien, xxxviii, p. 647.

Molophilus colonus, p. 195, *falcatus*, *paulus*, p. 196, Sitka, BERGROTH, Wien. ent. Z. vii, n. spp.

Gonomyia alboscutellata, Ros., = (*scutellata*, Egg.); BERGROTH, Verh. z.-b. Wien, xxxviii, p. 647.

G. spuria, Caffraria, BERGROTH, Ent. Tidskr. ix, p. 134; *G. galactoptera*, Sitka, *id.* Wien. ent. Z. vii, p. 196 : n. spp.

Trentepohlia, note on the genus, with table of the species; BERGROTH, Ent. Tidskr. ix, pp. 136 & 137.

T. exornata, S. Africa, BERGROTH, Ent. Tidskr. ix, p. 135, n. sp.

Limnophila bicolor, p. 648, and *placida*, Meig., p. 649, characters of noticed; BERGROTH, Verh. z.-b. Wien, xxxviii.

L. tetrasticta, p. 647, *posthabita*, p. 648, Laibach, BERGROTH, Verh. z.-b. Wien, xxxviii; *L. fungi*, Caffraria, *id.* Ent. Tidskr. ix, p. 137; *L. eukeniata*, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 9, pl. ii, fig. 3 : n. spp.

Pæcilostola flavicauda, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 10, pl. xi, fig. 4, n. sp.

Tricryphona, Zett., and *Amalopsis*, Hal., synonymy discussed; BERGROTH, Wien. ent. Z. vii, p. 197.

T. septentrionalis, Sitka, BERGROTH, p. 199, Wien. ent. Z. vii; *T. contraria*, Salzburg, *id.* Verh. z.-b. Wien, xxxviii, p. 650; *T. pusilla*, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 10 : n. spp.

Cladura fuscula, Lw., = (*Gonomyia pilipennis*, Strobl); MIK, Wien. ent. Z. vii, p. 30.

Amalopia pyrenaica, Pyrenees, p. 97, *claripennis*, England, p. 98, VERRALL, Ent. M. M. xxv, n. spp.

Dicranota, 3 new species without names, from Switzerland, described; HUGUENIN, Dipt. Helv. pp. 58 & 59.

Tipula: the British species tabulated with notes; VERRALL, Ent. M. M. xxv, pp. 22-27. *T. truncorum*, Meig., and *winnertzii*, Egg., distinguished, p. 652; BERGROTH, Verh. z.-b. Wien, xxxviii. *T. nubeculosa*, Meig., and *hortorum*, L., *T. ochracea*, Meig., and *lunata*, L., synonymies discussed; MIK, Wien. ent. Z. vii, p. 301. *T. paludosa*, Meig., fungoid disease of; GIARD, Bull. Sci. Nord. (3) i, p. 305.

T. alpium, p. 652, *mikiana*, p. 653, *bidens*, p. 654, Austria, BERGROTH, Verh. z.-b. Wien, xxxviii: *T. bonaspei*, p. 138, *pomposa*, p. 139, S. Africa, *id.* Ent. Tidskr. ix; *T. rufirostris*, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 5, pl. i, fig. 3: n. spp.

Holorusia, Loew, to be a group of *Tipula*; BERGROTH, Ent. Tidskr. ix, p. 139.

Nephrotoma varineura, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 6, pl. i, fig. 4, n. sp.

Iachnothrix, n. g., near *Trichocera*, for *I. ætherea*, n. sp., Cape Horn, pl. ii, fig. 1; BIGOT, Miss. Sci. Cap Horn, vi, p. 7.

Pachyrrhina: table of the British species, and notes on their occurrence, &c.; VERRALL, Ent. M. M. xxv, pp. 20 & 21. *P. antennata*, Wied., *petiolata*, Macq., *tincta*, Walk., sexes noticed; BERGROTH, p. 140, Ent. Tidskr. ix.

P. wulpiana, N. California, BERGROTH, Wien. ent. Z. vii, p. 200; *P. excelsior*, British Columbia, *id. t. c.* p. 239: n. spp.

Dolichopeza sylvicola, Curt., habits, &c., noticed; VERRALL, Ent. M. M. xxv, p. 20.

Ctenophora, characters of the British species; VERRALL, Ent. M. M. xxv, p. 97.

STRATIOMYIIDÆ.

Berris bellula, pulchella, Brazil, WILLISTON, p. 245, Tr. Am. Ent. Soc. xv, n. spp.

Hermetia illucens, L., p. 245, *albitarsis*, F., *apicalis*, Wied., p. 246, notes on; WILLISTON, Tr. Am. Ent. Soc. xv.

H. ceriogaster, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, p. 246, n. sp.

Chrysochlora, notes on problematic *respertilio* and *castanea*; WILLISTON, Tr. Am. Ent. Soc. xv, p. 248.

Chironyza, notes on 2 species from Brazil; WILLISTON, Tr. Am. Ent. Soc. xv, p. 244.

Merosargus gracilis, p. 249, *festiva*, p. 250, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, n. spp.

Dicranophora astuta, p. 250, *affinis*, p. 251, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, n. spp.

Chrysonotus analis, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, p. 251, n. sp.

Odontomyia altifrons, p. 363, pl. ix, figs. 3 & 4, *maculifrons*, p. 364, *nitidiceps*, p. 365, Argentine Rep., WULF, Tijdschr. Ent. xxxi, n. spp.

Euryneura nasica, *elegans*, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, p. 252, n. spp.

Nemotelus leucorhynchus, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 61, n. sp.

Promerisana, note on the characters; WILLISTON, Tr. Am. Ent. Soc. xv, p. 253.

P. cylindricornis, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, p. 253, n. sp.

Myrosargus braueri, Brazil, WILLISTON, p. 254, Tr. Am. Ent. Soc. xv, n. sp.

Chordonotus nigra, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, p. 255, n. sp.

TABANIDÆ.

N. American *Tabanidæ*; WILLISTON (934).

Chrysops cecutiens, L., metamorphoses; BELING, Verh. z.-b. Wien, xxxviii, p. 1.

C. pertinax, p. 132, N. America, *frazari*, San Domingo, *sequax*, p. 133, *pachycera*, p. 134, N. America, WILLISTON, Tr. Kansas Ac. x, n. spp.

Pangonia lasiophthalma, Argentine Rep., p. 365, pl. ix, fig. 6, WULF, Tijdschr. Ent. xxxi; *P. fera*, *dives*, N. America, WILLISTON, Tr. Kansas Ac. x, p. 130, n. spp.

Silcius pollinosus, note on; WILLISTON, Tr. Kansas Ac. x, p. 131.

Tabanus sequax, *comastes*, p. 137, *sodalis*, *fur*, p. 139, *frutellus*, p. 140, *pygmaeus*, N. America, *parvulus*, *fenestra*, San Domingo, p. 141, WILLISTON, Tr. Kansas Ac. x, n. spp.

LEPTIDÆ.

Leptis scolopicea, anatomical note on; BRANDT (99).

Hilarimorpha, position discussed; WILLISTON, Psyche, v, p. 99.

H. mikii, N. America, WILLISTON, Psyche, v, p. 99, n. sp.

ASILIDÆ.

Peculiar facets of the eyes of, described; MIK, Wien. ent. Z. vii, pp. 181 & 182.

Dioctria concinna, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 104; *D. bigoti*, Sardinia, *id. op. cit.* No. 9, p. 61: n. spp.

Stichopogon dziedickii, validity of, discussed; SCHNABL, p. 100, Ent. Nachr. xiv. *S. albofasciatus*, M., = (*dziedickii*, Schnabl); MIK, Wien. ent. Z. vii, pp. 31 & 182.

Saropogon perlatus, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 62; *S. varians*, Tunis, BIGOT, Exp. sci. Tun. Dipt. p. 7: n. spp.

Laphria nigrocerulea, Christmas Is., KIRBY, P. Z. S. 1888, p. 555, n. sp.

Cerdistus (?) *elegans*, Tunis, BIGOT, Exp. sci. Tun. Dipt. p. 8, n. sp.

Stilopogon (sic)? *Seilopogon* (olim) *aquecinctus*, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 62, n. sp.

MIDAIDÆ and NEMESTRINIDÆ.

Apiscera, systematic position discussed; WILLISTON, *Psyche*, v, p. 100.
Midas sardina, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 63, n. sp.
Nemestrina fascifrons, Tunis, BIGOT, Exp. sci. Tun. Dipt. p. 8, n. sp.

BOMBYLIDÆ.

Exoprosopa grandis, Mg., *pallasi*, Wied., = (*dyonisi*, Big., and *Anthrax rhyssacea*, Eversm.), *melana*, Lw., *rutila*, Wied., with synonymy; *macroptera*, Lw., *E. (Anthrax) nemesis*, F., (= *A. nox*, Walk.), notes on; RÖDER, Wien. ent. Z. vii, pp. 97 & 98. *E. rutila*, Wied., redescribed; COSTA, Atti Acc. Napoli (2) ii, No. 8, p. 38.

E. mayeti, Tunis, BIGOT, Exp. sci. Tun. Dipt. p. 9; *E. extensa*, Argentine Rep. p. 367, pl. x, fig. 1, WULF, Tijdschr. Ent. xxxi : n. spp.

Eucharimyia, n. g., for *E. dives*, n. sp., Ceylon; BIGOT, p. cxi, Bull. Soc. Ent. Fr. (6) viii.

Anthrax stenogastra, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 61, n. sp.

Argyromaba sinuata, Fil., habits of; BUYSSE, Rev. Sci. Bourb. i, p. 46.

Lomatia, date of; MIK, Wien. ent. Z. vii, p. 299.

Comaster bicolor, Argentine Rep., p. 366, pl. ix, figs. 7 & 8, WULF, Tijdschr. Ent. xxxi, n. sp.

Cyllenia laevis, Tunis, BIGOT, Exp. sci. Tun. Dipt. p. 9, n. sp.

Psilocephala costata, p. 368, *rubida*, p. 369, Argentine Rep., WULF, Tijdschr. Ent. xxxi, n. spp.

Usia teniolata, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 103, n. sp.

Cyrtosia pallipes, Sardinia, COSTA, Atti Acc. Napoli (2) ii, No. 7, p. 23, n. sp.

THEREVIDÆ and CYRTIDÆ.

Thereva bicinctella, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 104, n. sp.

Philopota, Wied., = (*Oligoneura*, Big.) ; BIGOT, p. clxx, Bull. Soc. Ent. Fr. (6) viii.

Henops brunneus, Hut., larva and habits, &c.; MASKELL, Tr. N. Z. Inst. xx, pp. 106-108, pl. x.

Oncodes limbatus, Tunis, BIGOT, Exp. sci. Tun. Dipt. fig. 7, n. sp.

EMPIDÆ.

Ocydromia nigripes, Zett., referred to *Hybos*; RÖDER, Wien. ent. Z. vii, p. 96.

O. elegans, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 21, pl. iii, fig. 5, n. sp.

Sphicosa (?) *bicolor*, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 19, n. sp.

Empia onthracina, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 19, n. sp.

Hilara, the veil and its use; BECKER (51). *H. quadricittata*, Meig., metamorphoses; BELING, Verb. z.-b. Wien, xxxviii, p. 2.

H. sartor, Gastein, BECKER, p. 11, B. E. Z. xxxii; *H. magellanica, laticornis*, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 20 : n. spp.

Leptopeza rirosa, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 21, n. sp.

Iteleodromia ochracea, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 22, pl. iii, fig. 4, n. sp.

H. ochracea referred to *Hilara*, Meig.; BIGOT, Wien. ent. Z. vii, p. 109.

Hemerodromia ochracea referred to *Hilara*; BIGOT, p. xxx, Bull. Soc. Ent. Fr. (6) viii.

Platypalpus major, Zett., metamorphoses; BELING, Verb. z.-b. Wien, xxxviii, p. 2.

Chelipoda, Mcq., *Thamnoderia*, Mik, *Lepidomyia*, Big., synonymy discussed; MIK, Wien. ent. Z. vii, pp. 299 & 327.

DOLICHOPODIDÆ.

Psilopodius hirtulus, Haity, BIGOT, p. xxix, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Psilopodinus pallescens, carolinensis, occidentalis, N. America, *pam-pæcilus*, Haity, p. xxix, *astequinus*, Mexico, p. xxx, BIGOT, Bull. Soc. Ent. Fr. (6) viii, n. spp.

Spatichira pulchrimana, N. America, BIGOT, p. xxx, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Pæcilobothrus mexicanus, Mexico, BIGOT, p. xxx, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Hydrophorus rogenhoferi, Mik, *borealis*, Lw., *bipunctatus*, Lehm., the characters of; MIK, Wien. ent. Z. vii, pp. 141 & 142.

Meleterus insignis, Thuringia, GIRSCHNER, Ent. Nachr. xiv, p. 97, n. sp.

Psilopus eximius, Sardinia, COSTA, Atti Acc. Napoli (2) ii, No. 8, p. 39; *P. cilitarsis*, Argentine Rep., WULF, p. 369, Tijdschr. Ent. xxxi : n. spp.

Saucropus cinereicollis, Argentine Rep., WULF, p. 370, Tijdschr. Ent. xxxi, n. sp.

Chrysotus luctuosus, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 23, n. sp.

SYMPHIDÆ.

Callicera macquartii, Rond., note on characters of; COSTA, Atti Acc. Napoli (2) ii, No. 7, p. 38.

Microdon mirabilis, p. 257, *inermis*, p. 258, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, n. spp.

Trichopsomyia, n. g., p. 259, for *T. polita, puella, tuberculata*, p. 260, *longicornis*, p. 261, n. spp., Brazil, WILLISTON, Tr. Am. Ent. Soc. xv.

Lepidostolus pulchra, p. 261, *similis, abdominalis*, p. 262, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, n. spp.

Chrysogaster viduata, L., larva described; BELING, Verh. z.-b. Wien, xxxviii, p. 3.

Cheilonia fuscata, Egg., metamorphoses; BELING, Verh. z.-b. Wien, xxxviii, p. 3.

Melanostoma punctulata, Argentine Rep., WULF, p. 375, Tijdschr. Ent. xxxi; *M. longicornis*, p. 263, *scitulum*, p. 264, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv : n. spp.

Catabomba and *Lasiophthicus*, note on their identity; BIGOT, p. cxxvii, Bull. Soc. Ent. Fr. (6) viii. *Catabomba*, O. S., and *Ichyrosyrphus*, Big., synonymy of, discussed; MIK, Wien. ent. Z. vii, p. 222.

Leucozona leucorum n. var. *nigripila*; MIK, Wien. ent. Z. vii, p. 141.

Syrphus lunulatus, Meig., problematic hermaphrodite; BECKER, Wien. ent. Z. vii, pp. 71-74.

S. erraticus, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, p. 264, n. sp.

Ichyrosyrphus, Big., note on; BIGOT, p. cxxvii, Bull. Soc. Ent. Fr. (6) viii.

Mesograptia polita, Say, the corn-feeding *Syrphus* fly, habits and metamorphoses; Ins. Life, i, pp. 5-8.

Sphaerophoria nasuta, trilimbata, p. 253, *S. (Mesograptia) quinquecincta, quinquemaculata*, p. 254, Mexico, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Ocyptamus trigonus, Wied., = (*Baccha torra*, Willist.); WILLISTON, Tr. Am. Ent. Soc. xv, p. 265.

Baccha stenogaster, p. 266, *exigua*, p. 267, *placiva*, p. 269, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv; *B. tricineta*, Argentine Rep., WULF, p. 376, pl. x, fig. 8, Tijdschr. Ent. xxxi : n. spp.

Hammerschmidtia = (*Eugeniamyia*, Willis.); MIK, Wien. ent. Z. vii, p. 27; *H. ferruginea*, Schum., synonymy; RÖDER (773).

Volucella bombylans, L., variation in colour of; MIK, SB. z.-b. Wien, xxxviii, p. 63.

V. meretricias, armula, p. 272, *prescutellaris, persimilis*, p. 273, *musta, mus*, p. 274, *viridis*, p. 275, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, n. spp.

Apophysophora, n. g., p. 276, for *Volucella hirtipes*, Macq. et *A. scutellata*, n. sp., Brazil, p. 277; WILLISTON, Tr. Am. Ent. Soc. xv.

Eristalis congruus, Argentine Rep., WULF, p. 371, Tijdschr. Ent. xxxi; *E. ochraceus*, p. 279, *praeceps, volaticus*, p. 280, *schistaceus, parvulus*, p. 282, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv : n. spp.

Dolicogina, Macq., is not distinct from *Helophilus*; BIGOT, p. 102, Bull. Soc. Z. Fr. xiii.

Helophilus nigrotarsatus, Schin., metamorphoses; BELING, Verh. z.-b. Wien, xxxviii, p. 4.

H. hahni, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 24, pl. iii, fig. 6, n. sp.

Pteroptila æmula, Brazil, WILLISTON, p. 283, Tr. Am. Ent. Soc. xv, n. sp.

Pterallastes nubeculosus, Argentine Rep., WULF, p. 372, Tijdschr. Ent. xxxi, n. sp.

Merodon trochantericus, p. 29, *rubiliventris*, p. 30, Sardinia, COSTA, Atti Acc. Napoli (2) i. No. 13, n. spp.

Habromyia, n. g., for *H. ceruleithorax*, n. sp., Brazil, WILLISTON, p. 284, Tr. Am. Ent. Soc. xv.

Xylota genuina, Brazil, WILLISTON, p. 284, Tr. Am. Ent. Soc. xv, n. sp.

Sterphus (sub *Xylota*) *cerulius*, Rond., = (*antennalis*, Phil.); WILLISTON, p. 285, Tr. Am. Ent. Soc. xv.

Cerilogaster, n. g., near *Xylota*, p. 285, for *C. fuscithorax*, n. sp., Brazil, p. 286; WILLISTON, Tr. Am. Ent. Soc. xv.

Enumerus crassitarsis, Sardinia, COSTA, p. 30, Atti Acc. Napoli (2) i, No. 13, n. sp.

Spilomyia grutiosa, Argentine Rep., p. 372, pl. x, figs. 6 & 7, WULF, Tijdschr. Ent. xxxi, n. sp.

Lepidostola, Mik, = (*Lepromyia*, Willis.); MIK, Wien. ent. Z. vii, p. 27.

Lepidomyia ortalina, Argentine Rep., WULF, p. 374, pl. x, figs. 2-4, Tijdschr. Ent. xxxi, n. sp.

Ceria lynchii, *sackenii*, p. 287, *mikii*, p. 288, *brauerii*, *roederii*, p. 289, *culpii*, p. 290, *bigotii*, p. 291, Brazil, WILLISTON, Tr. Am. Ent. Soc. xv, n. spp.

Exochila, Rond., 1857, non 1858, synonymy discussed; MIK, Wien. ent. Z. vii, pp. 27 & 28.

Orthopronopa nigra, Macq., larva and pupa noticed; SKUSE, P. Linn. Soc. N.S.W. (2) iii, p. 423.

CONOPIDÆ and CESTRIDÆ.

Physocephala and *Pleurocerina*, characters noticed; WILLISTON, Canad. Ent. xx, p. 10.

Tropidomyia, n. g. (*Conopiulæ*), for *T. bimaculata*, n. sp., Brazil; WILLISTON, p. 11, Canad. Ent. xx.

Hypoderma bovis, additional information on; ORMEROD, Rep. xii, pp. 104-125.

Dermatobia sp. attacking man in Spanish Honduras, MATAS, Ins. Life, i, pp. 76-80. fig. 10 & 11.

TACHINIDÆ.

Synoptical table of the genera found in Central America; WULF, pp. 5-7, Biol. Centr. Am. Dipt. ii.

Phasia crassipennis, F., varieties described and synonymy detailed; GIRSCHNER, Ent. Nachr. xiv, pp. 225-234.

Acaulona, n. g. (*Phasiinæ*), for *A. costata*, n. sp., Mexico, pl. iii, figs. 1, 1a, & 1b; WULF, p. 4, Biol. Centr. Am. Dipt. ii.

Alophora fenestrata, *luctuosa*, N. America, BIGOT, p. 255, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Eribrissa americana, N. America, BIGOT, p. 256, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Hystricia ambigua, Macq., pl. i, fig. 7, p. 13, *soror*, Will., fig. 9, p. 15, *amazna*, Macq., fig. 11, p. 16, figured and noticed; WULF, Biol. Centr. Am. Dipt. ii.

H. albiceps, Costa Rica, pl. i, fig. 6, *infuscata*, Mexico, p. 12, *pollinosa*, 1888. [VOL. XXV.]

Centr. America, fig. 8, p. 14, *velutina*, fig. 10, p. 15, *micans*, fig. 12, p. 16, Costa Rica, *dorsalis*, Centr. America, fig. 13, p. 17, WULP, Biol. Centr. Am. Dipt. ii; *H. fulvida*, N. America (but suppressed as being *testacea*, Macq., Bull. Soc. Ent. Fr. (6) viii, p. cvi), *erythrina*, Bahia, BIGOT, p. 79, Ann. Soc. Ent. Fr. (6) viii: n. spp.

Saundersia macula, Macq., pl. i, fig. 16, *albomaculata*, Jaenn. (sub *Micropalpus*), fig. 17, p. 21, figured and described; WULP, Biol. Centr. Am. Dipt. ii.

S. ochripes, pl. i, fig. 14, p. 19, *laticornis*, fig. 15, p. 20, *rufopilosa*, fig. 18, p. 22, *nigropilosa*, Centr. America, *unicolor*, p. 23, *rufitibia*, Mexico, *testacea*, pl. ii, fig. 1, p. 24, *cana*, pl. ii, fig. 12, Costa Rica, *bipartita*, fig. 3, Mexico, p. 25, *truncaticornis*, pl. ii, fig. 4, Panama, p. 26, WULP, Biol. Centr. Am. Dipt. ii, n. spp.

Jurinia dichroma, pl. ii, fig. 5, p. 27, Mexico and Costa Rica, *badiiventris*, fig. 6, Costa Rica, *adusta*, fig. 7, Mexico, p. 28, WULP, Biol. Centr. Am. Dipt. ii; *J. ? barbata*, *gonoides* (but suppressed as being *lateralis*, Macq., Bull. Soc. Ent. Fr. (6) viii, p. cvi), Mexico, BIGOT, p. 78, Ann. Soc. Ent. Fr. (6) viii: n. spp.

Belvosia bifasciata, Fab., fig. 8, *leucophrys*, Wied., fig. 9, figured, pl. ii, noticed, p. 30; WULP, Biol. Centr. Am. Dipt. ii.

Echinomyia popelii, Portsch., note on; STEIN, p. 361, Ent. Nachr. xiv; *E. robusta*, Wied., pl. ii, fig. 10, p. 32, *analis*, F., fig. 12, *piliventris*, Wulp, fig. 13, figured and noticed; WULP, Biol. Centr. Am. Dipt. ii.

E. flaviventris, pl. ii, fig. 11, p. 32, *nigrocalyptata*, p. 33, *dispar*, fig. 14, p. 34, Mexico, WULP, Biol. Centr. Am. Dipt. ii: *E. flavopilosa*, Java, *rubrifrons*, p. 81, *cora*, *macrocera*, p. 82, *notata*, p. 83, Mexico, BIGOT, Ann. Soc. Ent. Fr. (6) viii; *E. cinerascens*, Mexico, BIGOT, p. 256, t. c.; *E. tricondyla*, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 104: n. spp.

Besseria melanura, Meig., = (*Wahlbergia dimidiata*, Zett., *Apostrophus anthophilus* and *suspectus*, Lw., *Melia forcipata*, Big.) ; MIK, Wien. ent. Z. vii, pp. 302 & 303.

Schineria, Wulp, synonymy of, noticed; MIK, Wien. ent. Z. vii, p. 300. *S. ruficauda*, Wulp, generic position noticed; BIGOT, p. clxxxv, Bull. Soc. Ent. Fr. (6) viii.

Frontina (*Fabricia*) *pacta* attacking *Curubus clathratus*; MEINERT (577).

F. rufostylata, p. 83, *chrysopygata*, Mexico, *aurulenta*, Brazil, p. 84, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Fabricia infumata, Mexico, p. 85, *audicola*, Chili, p. 86, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Gonia: the European species revised, described, and tabulated; KOWARZ, Wien. ent. Z. vii, pp. 1-18. *G. senilis*, Will., note on; WOODWORTH, Psyche, v, p. 43.

G. incerta, Tunis, BIGOT, Exp. sci. Tun. Dipt. p. 10; *G. mexicana*, Durango, WULP, p. 40, pl. ii, fig. 19, Biol. Centr. Am. Dipt. ii; *G. erythrocerca*, Chili, BIGOT, p. 86, Ann. Soc. Ent. Fr. (6) viii: n. spp.

Trichophora, note on the characters; WULP, p. 35, Biol. Centr. Am. Dipt. ii.

T. rufina, pl. ii, fig. 15, *trisetosa*, fig. 16, Costa Rica, p. 36, *nitidifrons*,

Mexico, p. 37, WULF, Biol. Centr. Am. Dipt. ii; *T. ? albocalyptrata*, Quito, BIGOT, p. 82, Ann. Soc. Ent. Fr. (6) viii : n. spp.

Gynnomma, n. g., for *G. nitidiventris*, n. sp., Mexico, pl. v, fig. 17; WULF, Biol. Centr. Am. Dipt. ii, p. 38.

Nemocheta, n. g., p. 38, for *N. dissimilis*, u. sp., Costa Rica, p. 39, pl. v, fig. 18; WULF, Biol. Centr. Am. Dipt. ii.

Exorista confinis, F., ♀ described; STEIN, Ent. Nachr. xiv, p. 214. *E. nemeu*, parasitic on *Thyatira batis*; RÖDER, t. c. p. 221. *E. (Tachina) pavonia*, Zett., = (*T. grandis*, Zett., and *S. saturnia*, Rob.); *id.* Wien. ent. Z. vii, p. 95.

E. ornata, "Indes," *melas*, Tasmania, *rufipalpis*, Mexico, p. 256, *rufata*, Mexico and Brazil, p. 257, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Myobia pumila, habits and parasitism; LUCAS, Ann. Soc. Ent. Fr. (6) viii, pp. 102-104.

Ugimya sericaria referred to *Leskia*; BIGOT, p. xxxix, Bull. Soc. Ent. Fr. (6) viii.

Dejeania pallipes, Macq., pl. i, fig. 1, p. 8, *rutilioides*, Jaen., fig. 3, *corpulenta*, Wied., fig. 4, p. 9, *plumitarsis*, Wulp, fig. 5, pl. 10, figured and noticed; WULF, Biol. Centr. Am. Dipt. ii.

D. atrata, Costa Rica, Wulp, Biol. Centr. Am. Dipt. ii, pl. i, fig. 2, p. 8; *D. crocea*, C. Good Hope, BIGOT, p. 77, Ann. Soc. Ent. Fr. (6) viii : n. spp.

Chetolyga erythropyga, *nigriiventris*, *dubia*, Mexico, *rufonotata*, p. 257, *nigrifacies*, N. America, *nigripalpis*, *flavolimbata*, *albopicta*, *occidentalis*, *nitidiventris*, p. 258, *enea*, Mexico, *rufopicta*, N. America, p. 259, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Degeeria coria, *anthracina*, Mexico, BIGOT, p. 259, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Cestonia nigra, Mexico, BIGOT, p. 259, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Macquartius atrifrons, Mexico, BIGOT, p. 259, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Brachicoma macropogon, California, BIGOT, p. 259, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Prosopea americana, Mexico, BIGOT, p. 260, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Rhinophora umbratica, note on habits and synonymy; RÖDER, Ent. Nachr. xiv, p. 219. *R. (Tachina) lepida*, Mg., synonymical note on; *id.* Wien. ent. Z. vii, p. 253.

Leucostoma senescens, Zett., and *Tachina lepida*, M., synonymical note; STEIN, Wien. ent. Z. vii, p. 201.

Tachina lepida, M., referred to *Rhinophora*, ♀ described; RÖDER, Wien. ent. Z. vii, p. 95.

T. rufostomata, N. America, BIGOT, p. 260, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Phorocera barbata, *melanocephala*, Mexico, *parva*, N. America, BIGOT, p. 260, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Ceromasia quadriovittata, *zonata*, *pictigaster*, *castanifrons*, *crysocephala* (sic), p. 261, *spinipes*, *abbreviata*, p. 262, Mexico, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Viviana citrina, *V. (?) rufopygata*, Mexico, BIGOT, p. 262, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Heteropterina spinosula, N. America, BIGOT, p. 262, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Micropalpus nigrifrons, Mexico, BIGOT, p. 263, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Masicera fulvipalpis, sucerata, N. America, *flavifacies*, Mexico, BIGOT, p. 263, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Tricoliga caloptera, fulvidapex, Mexico, BIGOT, p. 263, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Blepharipeza and allies, descriptive and synonymical note; BIGOT, pp. 87-90, Ann. Soc. Ent. Fr. (6) viii.

B. aurocaudata, Monte Video, *andina*, Chili, p. 90, *monticola, inermis*, p. 91, *fulvipes*, N. America, *albifacies*, Brazil, p. 92, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Cryptopalpus flaccipes, N. America, p. 93, *palliceps*, Colombia, p. 94, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Epalpus lineolatus, p. 94, *erythrotonia, ochricornis*, p. 95, Chili, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Scopelia satunica, Mexico, BIGOT, p. 254, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Stevenia pictipes, N. America, p. 254, *pallidiventris, flavocalyptata*, Mexico, p. 255, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

DEXIDÆ and SARCOPHAGIDÆ.

Dezimorpha petiolata, Bond., redescribed and synonymy discussed; RÖDER, SB. Ges. Dorp. viii, p. 229.

D. græca, Parnassus, RÖDER, SB. Ges. Dorp. viii, p. 230, n. sp.

Dolechalla nigra, consobrina, p. 98, Moluccas, *D. ? picta*, p. 99, *venosa, maculifera*, p. 100, N. Guinea, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Cordyligaster fuscifacies, Java?, BIGOT, p. 101, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Dinera cristata, synonymy discussed at length; RÖDER, SB. Ges. Dorp. viii, pp. 227-232.

Stilbomyia jucunda, Christmas I., KIRBY, P. Z. S. 1888, p. 555, n. sp.

Prosenia maculifera, obscura, curvirostris, Mexico, BIGOT, p. 264, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Rhamphiniina formidabilis, p. 264, *major, anthracina*, Mexico, *picta, rubricauda*, Cuba, *argentina*, Buenos Ayres, p. 265, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Rhychiodezia tinctoris, Mexico, *spinosa*, Haity, BIGOT, p. 266, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Microphthalma calogaster, Mexico, BIGOT, p. 266, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Myocera ruficornis, N. America, *simplex*, Mexico, BIGOT, p. 266, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Tromodesia hemorrhoidalis, Mexico, BIGOT, p. 267, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Myostoma nigriceps, N. America, BIGOT, p. 267, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Homoderia longicornis, vittigera, p. 267, *flavipes, spinosa, triangulifera*, p. 268, Mexico, BIGOT, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Oplism albifacies, nigrifacies, Mexico, BIGOT, p. 268, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Pyrrhosia ochracea, Mexico, BIGOT, p. 268, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Megerlea rufocaulata, N. America, BIGOT, p. 269, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Morinia washingtoniana, N. America, BIGOT, p. 269, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Morphomyia rufonotata, California, BIGOT, p. 269, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Phorostoma appendiculata, Mexico, *melanogaster*, New York, BIGOT, p. 269, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Deixonoma fumipennis, partita, Mexico, BIGOT, p. 270, Ann. Soc. Ent. Fr. (6) viii, n. spp.

Anthracomia pallidicornis, Mexico, BIGOT, p. 270, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Sarcophaga affinis, Fall. synonymical and biological notes on ; WAGHTL, Wien. ent. Z. vii, pp. 277 & 278.

S. fulvicauda, England, MEADE, Ent. M. M. xxv, p. 28, n. sp.

Sarcophila wohlfortii in flesh of man, in Poland ; BRANDT (98).

MUSCIDÆ.

Muscides, sensu latiore, review of external organisation of ; PANDELLÉ (655).

Anatomical note on *Muscidæ* ; BRANDT (99).

Histology of muscles of *Musca domestica* and *Calliphora vomitoria* ; RAMÓN (709).

Lucilia nobilis attacking man ; MEINERT (572).

Development in egg of fly (*Musca vomitoria* and *Lucilia caesar*) ; HENKING (370).

Musca vomitoria, embryology of ; VOELTZKOW (899), BÜTSCHLI (120) ; histology of metamorphosis ; REES (717). *Calliphora vomitoria*, fungoid parasite of ; GIARD, C.R. Soc. Biol. (8) v, pp. 784-786 : fungoid disease of ; GIARD, Bull. Sci. Nord, p. 300 : frequenting corpses in coffins ; MÉGNIN (571).

Somomyia erythrocephala, brain of ; CUCCATI (172).

Curtoneura stabulans frequenting corpses in coffins ; MÉGNIN (571). *O. hortorum*, fungoid disease of ; GIARD, Bull. Sci. Nord (3) i, p. 301.

Glossina morsitans, note on ; LABOULBÈNE, Rev. Sci. xli, p. 700 : the injury of its bite noticed ; *id.* p. lxxxviii, Bull. Soc. Ent. Fr. (6) viii : note on its habits ; *id.* p. clviii, & c.

Hyadesimyia, n. g., p. 26, for *H. clausa*, p. 27, pl. iii, fig. 7, *sarcophagidea*, p. 28, pl. iii, fig. 8, Cape Horn, n. spp. ; BIGOT, Miss. Sci. Cap Horn, vi.

ANTHOMYIIDÆ.

Use of male organs in limiting species, discussed ; SCHNABL (810).

Aricia : descriptions of known species not described in his "Contributions," pp. 427-446 ; additions to the descriptions of species previously described in the "Contributions," pp. 447-483 ; addenda to the synoptic table of the species of *Aricia*, pp. 483-486 ; SCHNABL, Hor. Ent. Ross. xxii.

A. nigripennis, Warsaw, p. 378, *obscuratiformis*, Dolmar, p. 383, *condulwulpi*, Holland, p. 387, *charcoviensis*, S. Russia, p. 391, *hybrida*, Silesia, p. 396, *girschneri*, Germany, p. 401, *jaroschewskii*, S. Russia, p. 408, *zugmayeriae*, Austria, p. 411, *portschinskyi*, W. Russia, p. 414, *rossica*, Charkow, p. 418, *tiefii*, Graefenberg, p. 420, *steinii*, Saxony, p. 423, SCHNABL, Hor. Ent. Ross. xxii, n. spp.

Alloestylus, n. g., near *Aricia*, for *A. sudeticus*, n. sp., Silesia ; SCHNABL, pp. 49 & 82, Ent. Nachr. xiv : critical note on the genus ; MIK, Wien. ent. Z. vii, pp. 135 & 136.

Hera, n. g., p. 113, for *H. mikii*, Silesia, n. sp., p. 114, and including some known species ; SCHNABL, Ent. Nachr. xiv.

Hydrotea palaestrica, Mg., ♀ described ; STEIN, Wien. ent. Z. vii, p. 292.

H. eximia, Germany, STEIN, Wien. ent. Z. vii, p. 289, n. sp.

Hylemia coarctata, Fall., ravages of : ORMEROD, Rep. xii, pp. 80-88.

Anthomyia sp. frequenting corpses in coffins ; MÉGNIN (571).

A. (Acanthiptera) signata, West Prussia, BRISCHKE, Schr. Ges. DALL (2) vii, p. 107, n. sp.

Chortophila nigrisquama, Germany, STEIN, Wien. ent. Z. vii, p. 291, n. sp.

Syllegoptera ocypterata, Meig., ♀ = (*curtinervis*, Big.) ; MIK, Wien. ent. Z. vii, p. 29.

Homulomyia erythropsis, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 30, pl. iv, fig. 1, n. sp.

Schenomyza fenestrata, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 30, n. sp.

HELOMYZIDÆ, SCIOMYZIDÆ.

Leria rufifrons, *picticornis*, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 35, n. spp.

Helomyza veneris, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 34 pl. iv, fig. 2, n. sp.

Scatophagidae and *Sciomyzidae* : suggestions for the classification of the two groups, with tabulation of maritime genera ; BIGOT, Miss. Sci. Cap Horn, vi, pp. 31-33.

Scatophaga merdaria, fungoid disease of ; GUARD, Bull. Sci. Nord, p. 308.

Actora cinerascens, pl. iv, fig. 4, *A. (?) rufina*, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 37, n. spp.

Paractora, n. g., near *Actora*, p. 38, for *P. faejiana*, n. sp., Cape Horn p. 39 ; BIGOT, Miss. Sci. Cap Horn, vi.

ORTALIDÆ, TRYPETIDÆ.

Scoptera vibrans, L., habits of larva discussed; MIK, Wien. ent. Z. vii, p. 94.

Euphranta connexa, F., = (*Cephalia caloptera*, Big.); MIK, Wien. ent. Z. vii, p. 30.

Trypeta ludens, Loew., habits and metamorphoses; RILEY, Ins. Life, i, pp. 45-47, fig. 9.

Spilographa abrotani, BL., food of larva noticed; MIK, Wien. ent. Z. vii, p. 140.

Tephritis absinthii, F., p. 207, *conjuncta*, p. 209, variation; SINTENIS, SB. Ges. Dorp. viii. *T. pallida*, Oliv., note on; MIK, Wien. ent. Z. vii, p. 92. *T. hordei*, Ol., referred to *Hydrellia*; MIK, Wien. ent. Z. vii, p. 92.

Chrostoma priaceps, Sardinia, COSTA, Atti Acc. Napoli (2) i, p. 63, n. sp.

LONCHÆIDÆ, SAPROMYZIDÆ, HETERONEURIDÆ.

Palloptera guttipennis, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 36, pl. iv, fig. 3, n. sp.: but *P. guttipennis*, Big., referred to *Ephydridæ*, and probably to *Scatella*; MIK, Wien. ent. Z. vii, p. 141.

Sapromyza quadrivittata, Lw., = (*quadrilineata*, Strobl); MIK, Wien. ent. Z. vii, p. 221.

Heteroneura alpina, Lw., and *alhimana*, Mg., distinctive characters; GIRSCHNER, p. 98, Ent. Nachr. xiv.

Trigonometopus frontalis, M., redescribed; STEIN, Wien. ent. Z. vii, p. 202.

EPHYDRIDÆ, DEOSOPHILIDÆ.

Notiphila alboclavata, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 41, n. sp.

Discomyza cimiciformis, Hal., habits and characters; GIRSCHNER, p. 99, Ent. Nachr. xiv.

Pteremis nivalis, Hal., recorded from Cape Horn, p. 43, and figured, pl. iv, fig. 7; BIGOT, Miss. Sci. Cap Horn, vi.

Ceroptera hirta, quadrinota, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 41, n. spp.

Gitona ? pruinosa, Tunisia, BIGOT, Exp. sci. Tun. Dipt. p. 10, n. sp.

OSCINIDÆ.

Lestophonus, n. g., for *L. iceryæ*, n. sp., Adelaide (parasitic on *Icerya purchasi*); WILLISTON, Ins. Life, i, p. 21, woodcut.

Musca pumilionis, Oliv., nec Bjerk., referred to *Chlorops*; MIK, Wien. ent. Z. vii, p. 92.

Oscinis pumilionis, lengthy synonymical discussion; LAMPA (490). *O. flaviceps* and *nigra*, Oliv., noticed; MIK, Wien. ent. Z. vii, p. 92. *O. frit*, ravages, &c.; ORMEROD, Rep. xii, pp. 34-42.

Chlorops glabra, M., attacks on *Carum carui*; KÜHN (478). *C. tenuis* opus and sp. ♀, eggs noticed; LAMPA, Ent. Tidskr. ix, p. 123.

C. fuscipennis, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 105 n. sp.

Eurina ducalis, Sardinia, COSTA, Atti Acc. Napoli (2) ii, No. 7, p. 24 n. sp.

AGROMYZIDÆ, BORBORIDÆ.

Agromyza diademata, Cape Horn, BIGOT, Miss. Sci. Cap Horn, vi, p. 40 n. sp.

Milichia ? *tamaricis*, Tunis, BIGOT, Exp. sci. Tun. Dipt. p. 10, n. sp.

Borborus varipes, Cape Horn, BIGOT, Miss. Sci. Cap. Horn, vi, p. 42 n. sp.

Limosina, Mcq.: to this belongs *Leptocera nigra*, Oliv.; MIK, Wien. ent. Z. vii, p. 92.

PHORIDÆ.

Phora aterrima frequenting corpses in coffins; MÉGNIN (571).

HIPPOBOSCIDÆ.

Anatomical note on *Pupipara*; BRANDT (99).

(APHANIPTERA.)

Pulex serraticeps, Gerv., is intermediate host of *Tænia cucumerina* GRASSI (333).

(E.) RHYNCHOTA.

Schiödte's classification discussed; PUTON (692).

Fossil *Rhynchota*, cf. DEICHMÜLLER (178), OPPENHEIM (642).

HEMIPTERA-HETEROPTERA.

[Cf. ANTESSANTY (11), ASHMEAD (19), AUTRAN & REUTER (34), ATKINSON (27, 28), BERGROTH (61), BLACKBURN (79), COSTA (164), DISTANT (185, 191), FALLOU (256, 257, 258), FERRARI (269, 270), GADEAU (292), HORVATH (395, 396, 397), HOWARD (402), KARSCH (432), KIRBY (439), LETHIERRY (498), MEINERT (576), PROVANCHER (685), PUTON (689, 690, 691, 692), REUTER (736, 738, 739, 740, 741, 742, 743, 744, 745), REY (748, 749), SIGNORET (840), WATERHOUSE (916).]

Complete synonymy of the old writers (1758-1806) on *Heteroptera*; REUTER (736).

Classification: ASHMEAD (19) proposes the following new terms for subdivisions of *Heteroptera*, viz.—*Geodromica*, *Hydrodromica*, *Gymnocerata*, *Cryptocerata*.

PENTATOMIDÆ.

Echalia, notes on the Hawaiian species; BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 343.

Asopus micans, N. Guinea, DISTANT, Tr. E. Soc. 1888, p. 476, pl. xiii, fig. 6, n. sp.

Megymenum papuensis, New Guinea, DISTANT, Tr. E. Soc. 1888, p. 480, n. sp.

Chrysocoris equus, Fab., n. var. *nicobaricus*; ATKINSON, P. A. S. B. 1887, p. 13.

O. atricentris, p. 11, *andamanensis*, *viridis*, p. 12, India, ATKINSON, P. A. S. B. 1887, n. spp.

Coptosoma assamensis, Assam, ATKINSON, P. A. S. B. 1886, p. 174, and J. A. S. B. lvi, p. 35, n. sp.

Risibia, n. g., near *Cnephusa*, Jak., p. 168, for *R. xanthodrila*, n. sp., Siberia, p. 169; HORVATH, Rev. d'Ent. vii.

Podops (Petalodera) tangira, Fab., redescribed, p. 171, pl. i, fig. 2; HORVATH, Rev. d'Ent. vii, p. 171.

Apodiphus integriceps, Osch., Turkestan, HORVATH, Rev. d'Ent. vii, p. 172, ? n. sp.

Prionosoma villosus, N. America, PROVANCHER, Faune Can. Hem. p. 204, n. sp.

Euschistus jugalis, N. America, PROVANCHER, Faune Can. Hem. p. 204;

pl. xiii, p. 4, fig. 478 : DISTANT, Tr. E. Soc. 1888.

Noratilla, n. g., near *Afrania*, p. 479. for *N. fasciata*, n. sp., N. pl. xiii, fig. 2, p. 480, and to include *P. virgata*, Dall. ; DISTANT, Tr. E. Soc. 1888.

Vulsirea sipolisii, Minas Geraes, Fallou, Le Nat. (2) i, p. 36, 1
Peromatus unicolor. Minas Geraes, FALLOU, Le Nat. viii, p. 3
Ellexa ducidii, *rufipes*, *signoretii*, *brunnipennis*, Minas Geraes
Le Nat. (2) i, p. 36, n. spp.

Phimodera bufonia, Europe, PUTON, Rev. d'Ent. vii, p. 362, 1
Eurygaster maura, var. *griseus*; REY, Rev. d'Ent. vii, p. 9
Sternodontus affinis, Westw., = (*obtus*, Muls.); HORVATH, E
vii, p. 186.

Peribysus, n. g., near *Cydus*, p. 363, for *P. scutellaris*, n. sp.
p. 364 ; PUTON, Rev. d'Ent. vii.

Sehirus bicolor, L., n. var. *delagrangii*; PUTON, Rev. d'Ent. v
Ælia notata, S. France, REY, Rev. d'Ent. vii, p. 92, n. sp.

Eysarcoris arneus, Scop., and allies, characters of ; REY, R
vii, p. 94.

Peribalus sphaclatus, var. *suboblongus* ; REY, Rev. d'Ent. vi
Brachynema virens, Kl., = (*Pentatoma anabasis*, Beck.) ;
Rev. d'Ent. vii, p. 187.

Nezara viridula, L., n. var. *aurantiaca* ; COSTA, Atti Acc. Na
No. 9, p. 58. *N. heegeri*, Fieb., and *millieri*, Muls., characters
VATH, Rev. d'Ent. vii, p. 173, pl. i, figs. 3 & 4.

N. amurensis, Siberia, REUTER, Rev. d'Ent. vii, p. 200, n. sp.

Eurydema decoratum and *cognatum*, varr. of described ; REY, R
vii, p. 96. *E. festivum*, L., var. = (*decoratum*, H.-Sch.) ; HORV
p. 187.

Menida scotti, Jak., n. var. *sinensis* ; REUTER, Rev. d'Ent. vii,
Acanthosoma denticulatum, Jak., ♂ characters figured ; Re

Corizus : characters of species of the subgen. *Stictopleurus*, Stål; REY, Rev. d'Ent. vii, pp. 96-99.

C. subtomentous ?, n. sp.; REY, Rev. d'Ent. vii, p. 99.

Megalotomus castaneus, Pekin, REUTER, Rev. d'Ent. vii, p. 66, n. sp.

Stenocephalus femoralis, p. 66, *horvathi*, p. 67, Pekin, REUTER, Rev. d'Ent. vii, n. spp.

Rhopalus (*Æschyntes*) *angularis*, Pekin, REUTER, Rev. d'Ent. vii, p. 67, n. sp.

Colobathristes saccharicida, Java, KARSCH, Ent. Nachr. xiv, p. 206, n. sp.

Leptocoris *acuta*, injuries to rice in India, varieties described; ATKINSON, P. A. S. B. 1887, pp. 4-7.

Peruda, n. g. (*Leptocoris*aria), for *P. typica*, n. sp., Rio Janeiro; DISTANT, p. x, C.R. ent. Belg. xxxii.

Curupira, n. g. (*Leptocoris*aria), for *C. illustrata*, n. sp., Rio Janeiro; DISTANT, p. xi, C.R. ent. Belg. xxxii.

Mycillus, n. g., near *Plectrocnemia*, for *M. explicatus*, n. sp., New Guinea, pl. xiii, fig. 11; DISTANT, p. 481, Tr. E. Soc. 1888.

LYGÆIDÆ and PYRRHOCORIDÆ.

Lygeus marginatus, Jak., n. var. *sinensis*; REUTER, Rev. d'Ent. vii, p. 68. *L. festinus*, Thbg., = (*saundersi*, Mls., R.); PUTON, t. c. p. 109. *L. gibbicollis*, Costa, more fully described; COSTA, Atti Acc. Napoli (2) i, No. 2, p. 101.

L. subrufescens, Christmas I.; KIRBY, P. Z. S. 1888, p. 553, n. sp.

Nysius angustatus, Uhl., eggs described, &c.; OSBORN, in Riley Rep. 1887, p. 162.

N. longicollis, p. 344, *mauiensis*, p. 345, *whitei*, p. 346, Hawaiian Is., BLACKBURN, P. Linn. Soc. N.S.W. (2) iii; *N. volxemi*, St. Theresa, DISTANT, p. lxxix, C.R. ent. Belg. xxxii : n. spp.

Metarga contracta, obscura, Hawaiian Is., BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Montaltus, n. g., near *Graptostethus*, for *M. tricolor*, n. sp., New Guinea, pl. xiii, fig. 9; DISTANT, p. 483, Tr. E. Soc. 1888.

Cymus angustatus, mimicry in; DUZEE, Psyche, v, p. 27.

C. simplex, Transcaucasus, *obliquus*, Europe, HORVATH, Wien. ent. Z. vii, p. 310, n. spp.

Oedancula dorsalis, mimicry in; DUZEE, Psyche, v, p. 27.

Blissus leucopterus, note on; SCHWARZ, P. E. Soc. Wash. i, p. 105 : history, distribution, ravages, life-history, food-plants, enemies, diseases, remedies and preventives, bibliography; HOWARD, in Riley Rep. 1887, pp. 51-88, pls. i & iii. *B. leucopterus*, diseases of; FORBES, Psyche, v, p. 110. *B. doris*, Ferr., n. var. *obscurus*; REUTER, Rev. d'Ent. vii, p. 223. *Geocoris chloroticus*, Portugal, PUTON, Rev. d'Ent. vii, p. 101, n. sp.

Macropternus conveza var. *conica*; REY, Rev. d'Ent. vii, p. 99.

Rhyparochromus chiragra, F., characters of; REY, Rev. d'Ent. vii, p. 100.

Plinthinus bicolor, hab. ?, REY, Rev. d'Ent. vii, p. 101, n. sp.

- Tropistethus holosericeus* n. var. *albidipennis* ; HORVATH, Rev. d'Ent. vii, p. 173, pl. i, fig. 5.
- T. gentilis*, Dalmatia, HORVATH, Rev. d'Ent. vii, p. 174, pl. i, fig. 6, n. sp.
- Ischnocoris hemipterus*, macropterous form ; SAUNDERS, Ent. M. M. xxv, p. 35.
- Liabaris*, n. g., near *Homoscelis*, for *L. reuteri*, n. sp., Brazil ; HORVATH, p. 75, Rev. d'Ent. vii.
- Stygnocoris faustus*, E. Europe, HORVATH, Rev. d'Ent. vii, p. 174, n. sp.
- Peritrechus meridionalis*, Put., var. *fuscatus* ; FERRARI, p. 557, Ann. Mus. Genov. (2) vi.
- P. ambiguus*, Hungary, HORVATH, Rev. d'Ent. vii, p. 175, n. sp.
- Hyalochilus mediterraneus*, Sardinia, FERRARI, Ann. Mus. Genov. (2) vi, p. 557, n. sp.
- Aphanus pini*, L., var. *intermedius* ; PUTON, Rev. d'Ent. vii, p. 104.
- Pachymerus (Graptopeltus) albomaculatus*, Scott, note ou ; REUTER, Rev. d'Ent. vii, p. 68.
- Emblethis denticollis* n. var. *anodon* ; HORVATH, Rev. d'Ent. vii, p. 176.
- Notochilus obscurior*, Austria, REY, Rev. d'Ent. vii, p. 102 ; *N. (Anemastopus) noviburgensis*, France, ANTESSANTY, Rev. d'Ent. vii, p. 331, n. spp.
- Scolopostethus pictus* and allies, characters of ; SAUNDERS, Ent. M. M. xxv, p. 148.
- Atractophora bipunctata*, Minas Geraes, FALLOU, Le Nat. (2) i, p. 65, n. sp.
- Antilochus bicolor*, Nias I, LETHIERRY, Ann. Mus. Genov. (2) vi, p. 463, n. sp.
- Dinia seriepunctata*, Sumatra, LETHIERRY, p. 462, Ann. Mus. Genov. (2) vi, n. sp.
- Pyrhocoris apterus*, L., var. noticed ; HORVATH, Rev. d'Ent. vii, p. 176.
- P. niger*, Crete, REUTER, Rev. d'Ent. vii, p. 223, n. sp.
- Dindymus nigellus*, N. Guinea, DISTANT, Tr. E. Soc. 1888, p. 483, n. sp.
- Dysdercus mesiostigma*, pl. xiii, fig. 12, *papuensis*, p. 484, *simplex*, p. 485, N. Guinea, DISTANT, Tr. E. Soc. 1888, n. spp.

TINGITIDÆ.

- Zosmenus silenes*, Hungary, HORVATH, Rev. d'Ent. vii, p. 176, n. sp.
- Piesma quadrata* and *variabilis*, n. varr. of described ; REY, Rev. d'Ent. vii, p. 189.
- Monanthia cucullifera*, Sarepta, PUTON, Rev. d'Ent. vii, p. 105 ; *M. psammata*, Botafogo, *loricata*, Entre Rios, DISTANT, p. lxxxiii, C.R. ent. Belg. xxxii : n. spp.
- Acalypta hellenica*, Greece, REUTER, Rev. d'Ent. vii, p. 224, n. sp.
- Derephysia brevicornis*, Greece, REUTER, Rev. d'Ent. vii, p. 224, n. sp.
- Galeatus multiscriptus*, Greece, REUTER, Rev. d'Ent. vii, p. 225, n. sp.
- Eurycera intermedia*, Corsica, *magnicornis*, France, REY, Rev. d'Ent. vii, p. 191, n. spp.
- Monostira lobulifera*, Greece, REUTER, Rev. d'Ent. vii, p. 225, n. sp.

ARADIDÆ.

Aradus serbicus, Serbia, HORVATH, Rev. d'Ent. vii, p. 177; *A. notatus*, France, REY, t. c. p. 192 : n. spp.

Pictinus auriivillii, BERGROTH, Rev. d'Ent. vi, p. 247, recorded erroneously last year as *Aradus auriivillii*.

Brachyrhynchus bilobiceps, Sumatra, LETHIERRY, p. 464, Ann. Mus. Genov. (2) vi, n. sp.

Neuroctenus, synopsis of the genus; BERGROTH, Cefv. Finska Förh. xxix, pp. 173-187.

N. signoreti, Guinea, p. 176, *nitidulus*, Burma, p. 177, *eous*, p. 178, *par*, p. 179, Java, *majusculus*, Australia, p. 181, *distanti*, Mexico, *rubiginosus*, S. America, p. 184, BERGROTH, Cefv. Finska Förh. xxix, n. spp.

Ctenoneurus, n. g., for *Neuroctenus hochstetteri*, MAYR., and *Mezira lifuana*, Montr.; BERGROTH, p. 188, Cefv. Finska Förh. xxix.

CAPSIDÆ.

Forty species of the family found in the Hawaiian Is.; BLACKBURN (79).

Terratodella anthocoroides, Reut., sexes described; REY, Rev. d'Ent. vii, p. 198.

Miris albopilosus, Sumatra, LETHIERRY, p. 464, Ann. Mus. Genov. (2) vi, n. sp.

Lopus græseri, Amurland, AUTRAN & REUTER, Rev. d'Ent. vii, p. 201, n. sp.

Calocoris putoni, Syria, HORVATH, Rev. d'Ent. vii, p. 180; *C. tegularis*, Algeria, PUTON, t. c. p. 364; *C. costæ*, Armenia, REUTER, Wien. ent. Z. vii, p. 99 : n. spp.

Alleonotus fulvipes, Scop., n. var. *separandus*; HORVATH, Rev. d'Ent. vii, p. 179.

D-ræocoris trifasciatus, L., var., = (*annulatus*, Germ.); HORVATH, Rev. d'Ent. vii, p. 188.

Lygus viscidola, Paris, PUTON, Rev. d'Ent. vii, p. 365; *L. rutilans*, Tyrol, HORVATH, t. c. p. 181 : n. spp.

Capsus rutilus, H. S., var. described; FERRARI, p. 566, Ann. Mus. Genov. (2) vi.

Eccritotarsus incusus, p. lxxxii, *magnificus*, p. lxxxiii, S. America, DISTANT, C.R. ent. Belg. xxxii, n. spp.

Liocoris glabratus, Entre Rios, DISTANT, p. lxxxiii, C.R. ent. Belg. xxxii, n. sp. ?.

Fundanius bicolor, Petropolis, DISTANT, p. lxxxiii, C.R. ent. Belg. xxxii, n. sp.

Rexthenia designata, *majuscula*, Brazil, DISTANT, p. lxxxii, C.R. ent. Belg. xxxii, n. spp.

Pilophorus angustulus, Græco, REUTER, Rev. d'Ent. vii, p. 227, n. sp.

Systellonotus venustissimus, fully described. p. 10, figured, pl. i. fig. 10; COSTA, Atti Acc. Napoli (2) i, No. 10.

Myrmecomimus pederoides, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 59, n. sp.

Halticus henschii, Illyria, REUTER, Rev. d'Ent. vii, p. 58, n. sp.

Dicyphus stachydis, Europe, = (*Capsus collaris*, Flor., nec Fall.); REUTER, Ent. Medd. p. 111; *D. montandoni*, Roumania, *id.* Rev. d'Ent. vii, p. 62 : n. spp.

Globiceps fulvicollis, Jak., ♂ described; HORVATH, Rev. d'Ent. vii, p. 181.

Orthotylus palustris, Illyria, REUTER, Rev. d'Ent. v.i, p. 59, n. sp.

Euderon, n. g. (*Oncotylaria*), p. 106, for *E. martini*, n. sp., Biskra, p. 107; PUTON, Rev. d'Ent. vii.

Amblytulus delicatus, Per., noticed and redescribed; SAUNDERS, Ent. M. M. xxv, p. 78.

Byrsoptera cylindricollis, Costa, ♂ described; HORVATH, Rev. d'Ent. vii, p. 182.

B. pontica, Tauria, HORVATH, Rev. d'Ent. vii, p. 182, n. sp.

Psallus ambiguus, Fall., var. = (*Pæciloscytus diversipes*, Horv.); HORVATH, Rev. d'Ent. vii, p. 188.

P. carduellus, Dalmatia, HORVATH, Rev. d'Ent. vii, p. 183; *P. henschii*, Illyria, REUTER, Rev. d'Ent. vii, p. 59 : n. spp.

Escentricus singularis, Tauria, fig. 8, *oophorus*, Asia Minor, fig. 10, pl. i, HORVATH, p. 184, Rev. d'Ent. vii, n. spp.

Plagiognathus tomentosus, Sicily, REUTER, Nat. Sicil. vii, p. 236, n. sp.

Campylomma wrtzeni, Greece, REUTER, Rev. d'Ent. vii, p. 228, n. sp.

Stenarus visci, Paris, PUTON, Rev. d'Ent. vii, p. 366; *S. carbonarius*, Roumania, HORVATH, t. c. p. 186; *S. nigripilis*, Greece, REUTER, t. c. p. 228 : n. spp.

Paredrocoris pectoralis, Reut., ♀ described; HORVATH, Rev. d'Ent. vii, p. 186.

Tuponia lethierryi n. var. *doderi*; FERRARI, Ann. Mus. Genov. (2) vi, p. 567.

Helecoris (sub *Naucoris*) *minusculus*, Walk., = (*tabidulus*, Stål); HORVATH, Rev. d'Ent. vii, p. 188.

Helopeltis romundei, Java, WATERHOUSE, Tr. E. Soc. 1888, p. 207, n. sp.

CIMICIDÆ and ANTHOCORIDÆ.

Cryptostemma medium, S. France, REY, Rev. d'Ent. vii, p. 195, n. sp.

Henschiella, n. g. (*Ceratocombides*), p. 169, for *H. pellucida*, n. sp., Herzegovina, p. 170, pl. i, fig. 1; HORVATH, Rev. d'Ent. vii.

Tennostethus tibialis, Crete, REUTER, Rev. d'Ent. vii, p. 226, n. sp.

Montandoniella, n. g., near *Ectemnus*, p. 255, for *M. dacica*, n. sp., Buchare t, p. 256; PUTON, Rev. d'Ent. vii.

Triphleps brericollis, France, REY, Rev. d'Ent. vii, p. 196, n. sp.

Brachystelus parvicornis, Cost., forma brach., = (*clabius*, Reut.); REY, Rev. d'Ent. vii, p. 197.

Termtaphylum insigne, Reut., ♂ described; PUTON, Rev. d'Ent. vii, p. 106.

Myrmedobia distinguenda and *coleoprata*, variation of; REY, Rev. d'Ent. vii, p. 197.

SALDIDÆ.

Salda opacula, Zett., and *marginella*, Fieb., distinguished; REY, Rev. d'Ent. vii, p. 195.

S. oahuensis, Hawaiian Is., BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, p. 353, n. sp.

Acanthia variabilis, H.-Sch., n. var. *connectens*; HORVATH, Rev. d'Ent. vii, p. 179. *A. melanoscela*, Fieb., n. var. *pullidipennis*; REUTER, t. c. p. 226.

A. hirsuta, Illyria, REUTER, Rev. d'Ent. vii, p. 60, n. sp.

EMESIDÆ, REDUVIIDÆ, and NABIDÆ.

Ploiariodes rubromaculata, p. 349, *pulchra*, p. 350, Hawaiian Is., BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, n. spp.

Helonotocoris, n. n. for *Helonotus*, Uhler, nec A. & S., with *H. modiglianii*, n. sp., Sumatra; LETHIERRY, p. 463, Ann. Mus. Genov. (2) vi.

Ectrychotes costalis, Nias I., LETHIERRY, p. 465, Ann. Mus. Genov. (2) vi; *E. nigricentris*, China, FALLOU, Le Nat. viii, p. 413 : n. spp.

Paloptus bicolor, New Guinea, DISTANT, Tr. E. Soc. 1888, p. 485, n. sp.

Velinus geraensis, pilipes, Brazil, FALLOU, Le Nat. (2) i, p. 68, n. spp.

Debilis signoreti, Minas Geraes, FALLOU, Le Nat. (2) i, p. 68, n. sp.

Milya annulipes, Minas Geraes, FALLOU, Le Nat. (2) i, p. 68, n. sp.

Hammatocerus quadrisignatus, Minas Geraes, FALLOU, Le Nat. (2) i, p. 68, n. sp.

Rasahus sipolisii, Minas Geraes, FALLOU, Le Nat. (2) i, p. 68, n. sp.

Stenolemus novaki, Dalmatia, HORVATH, Rev. d'Ent. vii, p. 178, pl. i, fig. 7, n. sp.

Onccephalus simillimus, Amurland, REUTER, Rev. d'Ent. vii, p. 201, n. sp.

Centrosclerocoris desertus, Beck., = (*spinosa*, Jak.); HORVATH, Rev. d'Ent. vii, p. 188.

Harpactor niger, H.-Sch., forma brachyptera; HORVATH, Rev. d'Ent. vii, p. 178.

H. argenteolineatus, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 102, n. sp.

Coranus rugosicollis, Biskra, PUTON, Rev. d'Ent. vii, p. 106, n. sp.

Nabis rubritinctus, p. 351, *oscillans*, *koelensis*, p. 352, *N. (?) curtispennis*, p. 353, Hawaiian Is., BLACKBURN, P. Linn. Soc. N.S.W. (2) iii, n. spp.

HYDROMETRIDÆ, NAUCORIDÆ, NEPIDÆ, and NOTONECTIDÆ.

Hibernation of *Hydrometridæ*; REUTER (745).

Æpophelus bonnairii, habits; KEYS, Ent. M. M. xxiv, p. 174.

Velia major, Put., note on; REY, Rev. d'Ent. vii, p. 194.

Relations of *Metrocoris* and *Halobatodes* discussed; MEINERT (57).

Aphelochirus æstivalis, Fab., habits, &c.; GADEAU (292).

Nepu, monograph of, Stål's generic divisions being not adopted; FERRARI, Ann. Hofmuseum Wien, iii, pp. 161-194, pls. viii & ix.

N. spinigera, Malacca, p. 175, *rogenhoferi*, Comores Is., *rupaz*, Madagascar, p. 178, *eusoma*, Calcutta, p. 179, *steindachneri*, Wadai, *kohlii*, Ind. or., Mexico ? ?, Africa ?, p. 180, *dubia*, Trop. Asia, p. 181, *dentata*, India, *ingens*, Brazil ?, *archipelagi*, p. 183, *anonyma*, Java, &c., p. 184, *pfeiferiae*, E. India, p. 187, *stalii*, p. 188, *gredleri*, p. 189, S. Africa, FERRARI, Ann. Hofmuseum Wien, iii, n. spp.

Ranatra annulipes, China, FALLOU, Le Nat. viii, p. 413, n. sp.

Zaitha, oviposition ; BÖRNER, Soc. Ent. iii, p. 34.

Anisops varia, Fieb., = (*Notonecta nanuta*, Walk.); HORVATH, Rev. d'Ent. vii, p. 189.

Notonecta chinensis, Fokien, FALLOU, Le Nat. viii, p. 413, n. sp.

HEMIPTERA-HOMOPTERA.

[Cf. ASHMEAD (21), COSTA (164), DISTANT (185, 186, 187, 188, 189, 190), EDWARDS (215, 216, 217, 218), FERRARI (270), FUMOZUE (291), HORVATH (396), KIRBY (439), LETHBRIDGE (498, 499), LOW (525, 526), MARLATT (552), PUTON (689, 692), RILEY (756), UHLEB (894), WOODWORTH (939) ; also *Aphididae* and *Coccidae*.]

CICADIDÆ.

The European and N. American genera tabulated ; ASHMEAD, Ent. Am. iv, pp. 140 & 141. Synopsis of North American *Cicadidæ* ; WOODWORTH, Psyche, v, pp. 67 & 68.

Platyleura badia, Tenasserim, DISTANT, p. 453, pl. iv, figs. 6a & b, Ann. Mus. Genov. (2) vi, n. sp.

Gaena tenebricosa, Burma, DISTANT, p. 454, pl. iv, figs. 2a & b, Ann. Mus. Genov. (2) vi ; *G. delinenda*, Silhet, DISTANT, Ann. N. H. (6) i, p. 291 : n. spp.

Mogannia funebris, Stål, var. figured, pl. iv, figs. 1a & b ; DISTANT, Ann. Mus. Genov. (2) vi.

M. doriae, Sarawak, DISTANT, p. 520, Ann. Mus. Genov. (2) vi, n. sp.

Dundubia majuscula, Celebes, DISTANT, Ann. Mus. Genov. (2) vi, p. 521 ; *D. avata*, Borneo, *tavoyana*, Tavoy, *similis*, Sikkim, *id.* p. 292, Ann. N. H. (6) i : n. spp.

Huechys sanguinea, medical properties and colouring-matter of the abdomen, &c. ; FUMOZUE (291) : colouring-matter of ; *id.* p. xxii, Bull. Soc. Ent. Fr. (6) viii : its vesicating and other properties ; *id.* C.R. Ass. Sci. Fr. xvii, pl. i, p. 193. *H. sanguinolenta*, medical properties of ; ARNAUD & BROGNANT (13).

H. suffusa, Java, DISTANT, p. 291, Ann. N. H. (6) i ; *H. hæmatica*, Tenasserim, *id.* p. 454, pl. iv, figs. 5a & b, Ann. Mus. Genov. (2) vi ; *H. pingenda*, Sumatra, *celebensis*, Celebes, p. 519, *chryselectra*, Sarawak, p. 520, *id.* t. c. : n. spp.

Tosena depicta, Borneo, DISTANT, p. 323, Ann. N. H. (6) ii, n. sp.

Leptopsalltria picturata, Nilgiri Hills, *andamanensis*, Andaman Is., DISTANT, p. 370, Ann. N. H. (6) i, n. spp.

Cosmopsaltria nigra, Philippines, p. 292, *umbrata*, Sikkim, *lauta*, Borneo, p. 293, *minahussæ*, Celebes, p. 294, *silhetana*, Silhet, *jacoona*, Johore, p. 295, DISTANT, Ann. N. H. (6) i; *C. pigafetta*, Ternate, *id.* p. 371, t. c.; *C. albostrigata*, Philippines, *id.* p. 324, *op. cit.* ii; *C. lutulenta*, N. Guinea, *gemina*, Goram, p. 522, *capitata*, Aru Is., p. 523, *id.*, Ann. Mus. Genov. (2) vi : n. spp.

Bueturia sanduracata, Burma, DISTANT, p. 458, pl. iv, figs. 4a & b, Ann. Mus. Genov. (2) vi; *B. beccarii*, Sumatra, *id.* t. c. p. 524 : n. spp.

Pomponia solitaria, Andaman Is., p. 295, *obnubila*, Simla, p. 296, DISTANT, Ann. N. H. (6) i; *P. collina*, E. India, p. 371, *ransonnæti*, Ceylon, p. 372, *id.* t. c.; *P. scitula*, Burma, *id.* p. 456, Ann. Mus. Genov. (2) vi : n. spp.

Cryptotympana limborgi, Tenasserim, DISTANT, p. 296, Ann. N. H. (6) i; *C. epithesia*, Borneo, *id.* p. 325, *op. cit.* ii : n. spp.

Prasia princeps, Celebes, DISTANT, p. 325, Ann. N. H. (6) ii, n. sp.

Cicada, archæological considerations on; RABAUD (697). *C. septendecem*, ♂ structures; APGAR (12) : season of appearance of; SCHWARZ, P. E. Soc. Wash. i, p. 52.

C. elopurina, p. 207, *pontianaka*, p. 298, Borneo, DISTANT, Ann. N. H. (6) i; *C. germana*, Burma, *id.* p. 457, pl. iv, figs. 3a & b, Ann. Mus. Genov. (2) vi : n. spp.

Karenia, n. g., p. 457, for *K. ravidæ*, n. sp., Burma, p. 458, DISTANT, Ann. Mus. Genov. (2) vi.

Platyptedia, n. g., for *Cicada areolata* and *putnami*, Uhler, p. 23, and *P. minor*, n. sp., California, p. 81; UHLER, Ent. Am. iv.

Prunasis venosa, Texas, UHLER, Ent. Am. iv, p. 82, n. sp.

Prourna valrata, Arizona, UHLER, Ent. Am. iv, p. 84, n. sp.

Ceresa bubalus, notes on the oviposition of; MABLATT, Tr. Kansas Ac. x, pp. 84 & 85.

Tibicen amussitatus, Darjiling, *acberi*, p. 373, *casypaxæ*, Cashmere, *reticulatus*, Gilgit, p. 374, DISTANT, Ann. N. H. (6) i; *T. tigrinus*, Kullunur, *id.* p. 325, *op. cit.* ii : n. spp.

Tibicina luctuosa, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 102, n. sp.

Cicadetta continuata, Quetta, *literata*, Cashmere, DISTANT, p. 375, Ann. N. H. (6) i : n. spp.

Oxypleura calypso, Christmas I., KIRBY, P. Z. S. 1888, p. 553, n. sp.

FULGORIDÆ.

Orgerius conspersus, p. 107, *albofasciatus*, p. 108, Algeria, PUTON, Rev. d'Ent. vii.

Ricania flavicostalis, *affinis*, p. 554, *hyalina*, p. 555, Christmas I., KIRBY, P. Z. S. 1888, n. spp.

Meenoplus atrovirens, Nias I., LETHIERRY, p. 466, Ann. Mus. Genov. (2) vi, n. sp.

Myrilla, n. g., near *Polydictya*, for *M. obscura*, n. sp., New Guinea, pl. xiii, fig. 8; DISTANT, p. 487, Tr. E. Soc. 1888.

Desudaba scylla, New Guinea, DISTANT, Tr. E. Soc. 1888, p. 488, pl. xiii, fig. 5, n. sp.

Phantia longiceps, Algeria, PUTON, Rev. d'Ent. vii, p. 367, n. sp.

Haplacha plagiata, Nias I., LETHIERRY, Ann. Mus. Genov. (2) vi, p. 466, n. sp.

Trirhacus formosissimus, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 102, n. sp.

Histeropterus areolatum, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 103, n. sp.

Cixius: the British species tabulated, p. 101; *C. scotti*, n. n. for *simpler*, Scott, *remotus*, n. n. for *similis*, Scott, p. 100; EDWARDS, Ent. M. M. xxv.

Dictyophara fuscistigma, Sumatra, p. 466, *jarana*, Java, *nigroapicata*, Nias I., *sanguinolenta*, Sumatra, p. 467, LETHIERRY, Ann. Mus. Genov. (2) vi, n. spp.

Acarus tessellata, New Guinea, DISTANT, Tr. E. Soc. 1888, pl. xiii, fig. 7, p. 488, n. sp.

Stenocranus productus, Sumatra, LETHIERRY, p. 468, Ann. Mus. Genov. (2) vi, n. sp.

Kelisia putoni, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 69, n. sp.

Liburnia punctulum, *pallidula*, and *reysi*, characters of; EDWARDS, Ent. M. M. xxiv, p. 197, woodcuts.

L. difficilis, *discreta*, England, EDWARDS, Ent. M. M. xxiv, p. 197, n. spp.

Tettigometra sulphurea, Muls., n. var. *mendax*; HORVATH, Rev. d'Ent. vii, p. 186.

CERCOPIDÆ.

Cercopis olivacea, Nias I., p. 468, *cæruleicollis*, Sumatra, p. 469, LETHIERRY, Ann. Mus. Genov. (2) vi, n. spp.

Aphrophora similis, Irkutsk, LETHIERRY, Rev. d'Ent. vii, p. 252, n. sp.

MEMBRACIDÆ.

Centrotus percheroni, Nias I., *sinuatodorsum*, Sumatra, p. 469, *rectidorsum*, Nias I., p. 470, LETHIERRY, Ann. Mus. Genov. (2) vi, n. spp.

JASSIDÆ.

Jasside: the British genera and species described and tabulated; EDWARDS, Tr. E. Soc. 1888, pp. 32-78.

Tettigoniidæ: the British genera and species described and tabulated; EDWARDS, Tr. E. Soc. 1888, pp. 13-16.

Tettigonia sayeri, n. n. for *T. maculicollis*, Wlk., nec Sign.; DISTANT, Tr. E. Soc. 1888, p. 488.

Acocephalidæ: the British genera and species described and tabulated; EDWARDS, Tr. E. Soc. 1888, pp. 17-32.

Aconura sibirica, Irkutsk, LETHIERRY, Rev. d'Ent. vii, p. 252, n. sp.

Limnolettæ: synonymy discussed, should be replaced by *Cicadula*; WOODWORTH, Psyche, v, pp. 75 & 76.

Athysanus variegatus, Kbm., n. var. *dodori*; FERRARI, p. 569, Ann. Mus. Genov. (2) vi.

A. jakowleffi, Irkutsk, LETHIERRY, Rev. d'Ent. vii, p. 253, n. sp.

Deltocephalus acarifer, Irkutsk, LETHIERRY, Rev. d'Ent. vii, p. 253, n. sp.

Typhlocybidæ: the British genera and species described and tabulated; EDWARDS, Tr. E. Soc. 1888, pp. 78-107.

Typhlocyba hippocastuni, avellanæ, p. 157, *opaca, pruni*, p. 158, England, EDWARDS, Ent. M. M. xxv, n. spp.

PSYLLIDÆ.

Revision of the *Psyllidæ* of Austria-Hungary, with notes on food-plants, habits, &c.; LÖW (525).

Livia limbata, Wag., var. = (*crefeldensis*, Mink.); COSTA, Atti Acc. Napoli (2) i, No. 9, p. 60.

Aphalara conspersa, Hungary, LÖW, Verh. z.-b. Wien, xxxviii, p. 31, n. sp.

Psylla colorata, p. 32, *intermedia*, p. 33, Goritz, LÖW, Verh. z.-b. Wien, xxxviii, n. spp.

Amblyrhina: table of species of; LOEW, Rev. d'Ent. vii, p. 382.

A. putonii, France, LOEW, p. 381, Rev. d'Ent. vii, p. 381, n. sp.

Trioxa acutipennis, Zett., = (*femoralis*, Flor., and *alpestris*, LÖW), p. 24; larva described, p. 39; LÖW, Verh. z.-b. Wien, xxxviii.

T. versicolor, Hungary, p. 34, *agrophila*, Austria, p. 35, *saxifragæ*, Styria, p. 36, *thomasi*, Tyrol, p. 37, LÖW, Verh. z.-b. Wien, xxxviii, n. spp.

Calophya nigripennis, n. n. for *rhois*, Glover, nec LÖW; RILEY, P. Biol. Soc. Washington, ii, p. 69, note.

Pachypsylla, n. g., p. 71, for *Psylla renusta*, O.-Sack., *celtidis-mammæ*, Riley, which are redescribed, pp. 72 & 73, and *P. (Blastophysa) c-gemma*, n. sp., N. America; RILEY, P. Biol. Soc. Washington, ii.

Ceropsylla, n. g., *Triozinæ*, for *C. sideroxyli*, n. sp., N. America; RILEY, P. Biol. Soc. Washington, ii.

Rhinopsylla, n. g., *Triozinæ*, p. 77, for *R. schwarzi*, n. sp., Florida, p. 78; RILEY, P. Biol. Soc. Washington, ii.

APHIDIDÆ.

[Cf. BOS (91), CARRIÈRE (136), CHOLODKOVSKY (144), LEMOINE (491, 495), RILEY (757, 761), SHIPLEY (838), WEED (919), WILL (929).]

Remarks on Oestlund's *Aphididæ* of Minnesota; BUCKTON, Ent. M. M. xxv, pp. 94 & 95.

Development in viviparous *Aphididæ* (*Aphis pelargonii, suliceti*, and *roseæ*); WILL (929).

Siphonophora rudbeckiæ, Fitch, metamorphosis; WEED, Psyche, v, p. 127.

Phorodon humuli, habits, figures; RILEY (761): and annual life-history, injuries, remedies; *id.* (757): notes on its habits and migrations; *id.* Ins. Life, i, pp. 70-74.

Rhopalosiphum maidis, habits and injuries to corn in N. America ; WEBSTER, in Riley Rep. 1887, p. 148.

Aphis cornifoliae, Fitch, metamorphoses ; WEED, Psyche, v, p. 123. *A. papaveris*, relations of *Lasius niger* with this, and its influence on *Vicia faba* ; BOS (91). *A. mali*, &c., parasitic disease of ; GIARD, C.R. Soc. Biol. (8) v, p. 783.

Chaitophorus riminalis, Monell, metamorphosis ; WEED, Psyche, v, p. 133.

Callipterus discolor, Monell, metamorphosis ; WEED, Psyche, v, p. 131.

Schizoneura cornicola, Walsh, metamorphosis ; WEED, Psyche, v, p. 129.

Chermes abietis, L., development ; CHOLODKOVSKY, Zool. Anz. xi, pp. 45-48.

Phyllozera, biological sketch of ; SHIPLEY (838). *P. vastatrix*, Pl., biological observations ; CARRIÈRE (136) : metamorphosis, &c. ; *id. t. c.* : at the Cape ; PÉRINGUEY (666). *P. punctata*, structure of brain ; LEMOINE, C.R. cvi, pp. 678-680, and (494) : anatomy of ; *id.* (495).

COCCIDÆ and ALEURODIDÆ.

[Cf. ASHMEAD (26), BLANC (80), DOUGLAS (202, 203, 204), DUGÈS (212), MASKELL (559), MORGAN (614, 615), RILEY (761).]

Observations on the scales, and miscellaneous remarks on some genera ; MORGAN (614).—Larvæ of *Lepidoptera* feeding on *Coccidæ* ; DOUGLAS (204).

Aspidiotus zonatus, sexes and mature female described ; MORGAN, Ent. M. M. xxiv, pp. 205-208, woodcut.

Mytilaspis pomorum, note on ; DOUGLAS, Ent. M. M. xxv, p. 16 : some notes on its external structure ; BLANC (80).

Vinsonia stellifera, Westw., descriptive and synonymical note on ; DOUGLAS, Ent. M. M. xxv, p. 152.

Lecanium lauri, p. 57, *bituberculatum*, p. 59, descriptions of and notes on ; DOUGLAS, Ent. M. M. xxv.

L. clypeatum, Britain, on ferns in conservatories ; DOUGLAS, Ent. M. M. xxv, p. 58, n. sp.

Physokermes hemicyphus, Dalm., occurrence of in Sweden ; AURIVILLIUS, Ent. Tidskr. ix, p. 124 : its parasite ; *id. t. c.* p. 144.

Dactylopius citri, Boisd., = (*L. phyllococcus*, Ashm., and *D. destructor*, Comst.) ; *Ins. Life*, i, p. 118.

Pseudococcus ulicis, p. 88, woodcut, *ulmi*, p. 124, woodcut, England, DOUGLAS, Ent. M. M. xxv, n. spp.

Signoretia, n. n. for *Westwoodia*, Sign., nec Lap. ; KRAATZ, Deutsche e. Z. xxxii, p. 176.

Bergrothia, n. n. for the above *Signoretia* ; KRAATZ, Deutsche e. Z. xxxii, p. 360.

Coccus agavium, at Kew, on Agave from N. America, DOUGLAS, Ent. M. M. xxv, p. 150, woodcut, n. sp.

Icerya purchasi, figures, parasites, &c. ; RILEY (761).

Ortonia natalensis, Natal, DOUGLAS, Ent. M. M. xxv, p. 86, woodcut, n. sp.

Llaveia azinus, Mexico, DUGÈS, Nat. Mex. (2) i, p. 160, pl. xv, figs. *a* & *b*, n. sp.

Orthezia insignis, Dougl., note on ; DOUGLAS, Ent. M. M. xxiv, p. 208.

O. edwardsii, California, ASHMEAD, p. 203, Canad. Ent. xx, n. sp.

Aleurodes loniceræ, Walk., = (*xylostei*, Westh.) ; KARSCH, Ent. Nachr. xiv, p. 31.

A. ribium, England, DOUGLAS, Ent. M. M. xxiv, p. 265, woodcut, n. sp.

(ANOPLURA.)

[Cf. TROUESSART & NEUMANN (887).]

Echinophthirius microchir, Auckland Is. (on *Phocarctos hookeri*) ; TROUESSART, Le Nat. (2) ii, p. 80, woodcut, n. sp.

Phthirius inguinalis, habitat, &c. ; J. Micr. & Nat. Sci. (n.s.) i, pp. 255 & 256.

(F). *NEUROPTERA.*

Classification of the order discussed ; SELYS, *Ann. Ent. Belg.* xxxii, pp. 122-125.

The validity of Brauer's orders ; BRAUER (100).

Catalogue of *Neuroptera* of Belgium ; SELYS (829).

Fossil *Neuroptera*, cf. OPPENHEIM and Palæoentomology.

TRICHOPTERA.

[Cf. COSTA (164), KLAPÁLEK (441), KOLBE (445, 450), MABILILE (538), MORTON (616, 617), MÜLLER (621, 622), ROSTOCK & KOLBE (778), SELYS (829).]

External and internal anatomy of larvæ and pupæ, and structure of cases ; KLAPÁLEK (441), pp. 1-13.

Notes on oviposition ; MÜLLER, *Ent. Nachr.* xiv, pp. 259-261.

Phryganea grandis, natural history of ; KOLBE, *Ent. Nachr.* xiv, pp. 295-299. Particulars as to the egg-mass and young larvæ of ? *Phryganea* sp. ? ; *id.* SB. nat. Fr. 1888, pp. 22-26.

Limnophilus lunatus, Curt., metamorphoses ; KLAPÁLEK, pp. 14-17, fig. 5, *Arch. naturw. landesforsch. Böhmen*, vi, No. 5.

Halesus auricollis, Pict., pp. 17-19, fig. 6, *interpunctatus*, Zett., pp. 20-22, fig. 7, metamorphoses ; KLAPÁLEK, *Arch. naturw. landesforsch. Böhmen*, vi, No. 5.

H. hyadesi, Orange Bay, MABILILE, *Miss. Sci. Cap Horn*, vi, p. 7, pl. i, fig. 4, n. sp.

Drusus trifidus, McLach., metamorphoses ; KLAPÁLEK, pp. 22-25, fig. 8, *Arch. naturw. landesforsch. Böhmen*, vi, No. 5.

Sericostoma personatum, Spence, metamorphoses ; KLAPÁLEK, pp. 25-28, fig. 9, *Arch. naturw. landesforsch. Böhmen*, vi, No. 5. *S. mac-lachlanianum* more fully described ; COSTA, *Atti Acc. Napoli* (2) i, No. 9, p. 12.

Silo nigricornis, Pict., metamorphoses ; KLAPÁLEK, pp. 28-31, fig. 10, *Arch. naturw. landesforsch. Böhmen*, vi, No. 5.

Lasiocephala basalis, Kol., metamorphoses ; KLAPÁLEK, *Arch. naturw. landesforsch. Böhmen*, vi, No. 5, pp. 31-34, fig. 11

Odontocerum albicorne, Scop., metamorphoses ; KLAPÁLEK, pp. 35-37, fig. 12, *Arch. naturw. landesforsch. Böhmen*, vi, No. 5.

Leptocerum senilis, Burm., pp. 37-39, fig. 13, *aterrimus*, pp. 40-42, fig. 14, metamorphoses ; KLAPÁLEK, *Arch. naturw. landesforsch. Böhmen*, vi, No. 5.

Mystacides longicornis, L., metamorphoses ; KLAPÁLEK, pp. 42-45, fig. 15, *Arch. naturw. landesforsch. Böhmen*, vi, No. 5.

Trienodes bicolor, Curt., metamorphoses ; Klapálek, pp. 45-48, fig. 16, Arch. naturw. landesforsch. Böhmen, vi, No. 5.

Hydropsyche angustipennis, Curt., pp. 48-51, fig. 17, *sazonica*, McLach., pp. 51-54, fig. 18, metamorphoses ; Klapálek, Arch. naturw. landesforsch. Böhmen, vi, No. 5.

Philopotamus montanus, larva, &c. ; MORTON, Ent. M. M. xxv, pp. 89-91 : var. *scoticus* at Killarney, note on ; KING, *op. cit.* xxiv, p. 214.

Wormaldia occipitalis, Pict., trophi of larva ; MORTON, P. N. H. Soc. Glasg. (n.s.) ii, p. 115, pl. ii.

Polycentropus flavomaculatus, Pict., metamorphoses ; Klapálek, pp. 54-56, fig. 19, Arch. naturw. landesforsch. Böhmen, vi, No. 5.

Chimarra albomaculata, Porto Rico, Kolbe, p. 175, Arch. f. Nat. liv, 1, n. sp.

Rhyacophila nubila, Zett., metamorphoses ; Klapálek, pp. 57-59, fig. 20, Arch. naturw. landesforsch. Böhmen, vi, No. 5.

Agapetus comatus, Pict., metamorphoses ; Klapálek, pp. 59-61, fig. 21, Arch. naturw. landesforsch. Böhmen, vi, No. 5.

Macronema sp., notes on the breathing apparatus of this and of other Trichoptera ; MÜLLER, Ent. Nachr. xiv, pp. 274-276.

Ithytrichia lamellaris, cases, &c. ; MORTON, Ent. M. M. xxiv, pp. 171-173.

Orthotrichia angustella, case of ; MORTON, Ent. M. M. xxv, p. 93.

Lagenopsyche, presumed case of, noticed ; MORTON, Ent. Nachr. xiv, p. 16.

NEUROPTERA-PLANIPENNIA.

[Cf. COSTA (164), GERSTAECKER (306), HAGEN (359, 360, 361), KOLBE (445), ROSTOCK & KOLBE (778), SELYS (829), WESTWOOD (926).]

Sialidæ.

Corydalis asiatica, note on ; MACLACHLAN, Ent. M. M. xxv, p. 133.

Myrmeleonidæ.

Palpares gigas, Dalm., p. 94, *caffer*, Burm., p. 95, notes on ; GERSTAECKER, MT. Vorpomm. xix.

P. obsoletus, p. 95, *agrotus*, p. 98, W. Africa, GERSTAECKER, MT. Vorpomm. xix, n. spp.

Stenares hyena, Dalm., note on ♀ ; GERSTAECKER, p. 99, MT. Vorpomm. xix.

Acanthaclysis (?) *debilis*, Lagos, GERSTAECKER, p. 100, MT. Vorpomm. xix, n. sp.

Glenurus mollis, Colombia, GERSTAECKER, p. 101, MT. Vorpomm. xix, n. sp.

Periclystus, n. g., near *Glenurus*, p. 103, for *P. laceratus*, p. 105, *callipeplus*, p. 107, n. spp, Australia ; GERSTAECKER, MT. Vorpomm. xix.

Forniculeo nubilus, Sierra Leone, GERSTAECKER, p. 109, MT. Vorpomm. xix, n. sp.

Myrmeleon illustris, Gerst., note on its characters ; GERSTAECKER,

p. 111, MT. Vorpomm. xix. *M. formicarius*, L., habits and parasite; RUDOW, Soc. Ent. iii, p. 137. *M. immaculatus*, De G., pp. 188-191, *mobilis*, Hag., pp. 204-206, *formicalynx*, L., pp. 206-209, characters and synonymy, *rusticus*, Hag., described, p. 210; HAGEN, Canad. Ent. xx.

M. fulcipennis, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 89; *M. scopifer*, Ceram, p. 110, *timidus*, Chiriqui, p. 112, GERSTAECKER, MT. Vorpomm. xix : n. spp.

Brachynemurus, n. g., p. 34, to include the following species of *Myrmeleon*, which are redescribed, viz., *longicaudus*, Br., p. 35, *nodulosus*, Ramb., p. 36, *versutus*, Walk., p. 37, *abdominalis*, Say, p. 57, *peregrinus*, Hag., p. 59, *blaudus*, Hag., p. 72; and the following new species, *carrizonus*, Texas, p. 93, *sackeni*, Texas, p. 94, *longipalpis*, California, p. 95; HAGEN, Canad. Ent. xx.

Dendroleon pantherinum, Fab., p. 185, *obsoletum*, Say, p. 187, characters, &c., noticed; HAGEN, Canad. Ent. xx.

Ascalaphidæ.

Ascalaphus: the metamorphoses of the species discussed, with special reference to *A. insimulans*, Walk., the larva and perfect insect being figured with details; WESTWOOD (926). *A. expansus* and *radians*, Gerst., note on their characters; GERSTAECKER, MT. Vorpomm. xix, pp. 92 & 93.

Cordulecerus inquinatus, Chiriqui, GERSTAECKER, MT. Vorpomm. xix, p. 89, n. sp.

Colobopteris trivalis, Chiriqui, GERSTAECKER, MT. Vorpomm. xix, p. 90, n. sp.

Puer (?) *pardalis*, Sierra Leone, GERSTAECKER, p. 91, MT. Vorpomm. xix, n. sp.

Mantispidæ.

Anisoptera, Schneid., to be used in place of *Trichoscelia*, Westw.; GERSTAECKER, p. 117, note, MT. Vorpomm. xix.

A. jocosa, p. 117, *amenula*, p. 119, Amazons, *remipes*, Bogotà, p. 120, GERSTAECKER, MT. Vorpomm. xix, n. spp.

Mantispa debilis, Amazons, p. 114, *stenoptera*, N. Guinea, p. 115, GERSTAECKER, MT. Vorpomm. xix, n. spp.

Osmylidæ.

Sisyra iridipennis redescribed; COSTA, Atti Acc. Napoli (2) i, No. 9, p. 51.

Hemerobiidæ.

Hemerobius signatus redescribed; HAGEN, P. Bost. Soc. xxiii, p. 565.

H. impudicus, Brazil, p. 127, *cirriiformis*, Amazons, p. 128, GERSTAECKER, MT. Vorpomm. xix, n. spp.

Micromus: monograph of the genus; HAGEN (360).

M. montanus, p. 279, *rariolosus*, p. 284, N. America, *cubanus*, Cuba, p. 286, *angustus*, N. America, p. 287, *insularis*, Madagascar, p. 292, HAGEN, P. Bost. Soc. xxiii; *M. tessellatus*, Blumenau, GERSTAECKER, p. 129, MT. Vorpomm. xix : n. spp.

Megalomus psychodoides, marmoratipennis, Gay, referred to *Hemerobius*; HAGEN, P. Bost. Soc. xxiii, p. 566.

Chrysopidæ.

Chrysopa vulgaris, emergence from egg; OLIVIER, Rev. Sci. Bourb. i, p. 211.

C. bifidilinea (= *ypsilon*, Costa, olim), Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 9, p. 52; *C. krugii*, Porto Rico, KOLBE, p. 173, pl. ix, fig. 2, Arch. f. Nat. liv, 1: n. spp.

Protochrysopa, n. g., for *Chrysopa insularis*, Wlk.; KOLBE, p. 174, Arch. f. Nat. liv, 1.

Apochrysa mirifica, Chiriqui, GERSTAECKER, p. 122, MT. Vorpomm. xix, n. sp.

Nothochrysa panchlora, Brazil, GERSTAECKER, p. 123, MT. Vorpomm. xix, n. sp.

Leucochrysa p'typtera, Brazil, p. 124, *inquinata*, p. 125, *radiosa*, p. 126, Peru. GERSTAECKER, MT. Vorpomm. xix, n. spp.

PSEUDO-NEUROPTERA.

THYSANURA.

[Cf. GRASSI (329), JOURDAIN (425), OUDEMANS (649), PARONA (657, 658).]

Systematic position of *Thysanura* discussed; also many points of comparative anatomy; are the *Thysanura* primitive or degenerate? GRASSI (329).

Smynthurus doderii, Sardinia, PARONA, Ann. Mus. Genov. (2) vi, p. 84, woodcuts, n. sp.

Tomocerus niveus, Jos., noticed, p. 139, pl. i, fig. 4; PARONA, Ann. Mus. Genov. (2) vi.

T. doderii, Liguria, PARONA, Ann. Mus. Genov. (2) vi, p. 139, pl. i, fig. 5, n. sp.

Beckia albinos, Nic., n. var. *bidenticulata*, Parona, p. 141, pl. i, fig. 6; Ann. Mus. Genov. (2) vi.

Seira ferrarii, Genoa, PARONA, p. 141, pl. i, fig. 7, Ann. Mus. (2) vi, n. sp.

Anatomy of *Machilis maritima*; OUDEMANS (647): note on structure of thorax, and abdomen and exsertile vesicles; JOURDAIN (425).

Achorutes armatus and *Templetonia nitida* frequenting corpses in coffins; MÉGNIN (571).

Japyx solifugus, Hal., variation noticed; PARONA, Ann. Mus. Genov. (2) vi, p. 148.

J. goliath, Guatemala, PARONA, Ann. Mus. Genov. (2) vi, p. 80, woodcuts, n. sp.

Nicoletia phytophila, Gerv., p. 145, pl. ii, fig. 9, *maggii*, Grassi, pp. 146-148, pl. ii, fig. 10, notes on; PARONA, Ann. Mus. Genov. (2) vi.

Campodea staphylinus, Westw., var. noticed, p. 145, pl. i, fig. 8 ; PARONA, Ann. Mus. Genov. (2) vi.

Lepisma minutu, Müll., noticed ; PARONA, p. 150, pl. ii, figs. 11a & b, Ann. Mus. Genov. (2) vi.

MALLOPHAGA.

[Cf. PACKARD (651), PIAGET (671).]

Mallophaga, systematic position of, discussed ; PACKARD (651).

Docophorus acuminatus, on *Turacus purpureus*, p. 147, pl. iii, fig. 1, *sulcatus*, on *Ardea minuta*, p. 148, fig. 2, *truncatus*, on *Aulacorhynchus rubroregularis*, p. 150, fig. 3, PIAGET, Tijdschr. Ent. xxxi, n. spp.

Nirmus grandiceps, on *Penelipodes manilla*, fig. 4, pl. iii, p. 150, *laticeps*, on *Aulacorhynchus rubroregularis*, fig. 5, p. 152, PIAGET, Tijdschr. Ent. xxxi, n. spp.

Oncophorus major, on *Ocydromus lafresnayanus*, pl. iii, fig. 6, p. 153, PIAGET, Tijdschr. Ent. xxxi, n. sp.

Goniocotes crassipes, on *Tallegallus cuvieri*, pl. iii, fig. 7, p. 154, PIAGET, Tijdschr. Ent. xxxi, n. sp.

Lipeurus monilis, Nitzsch., figured, pl. iii, fig. 8, redescribed, p. 155 ; PIAGET, Tijdschr. Ent. xxxi.

L. quadripustulatus, on *Hydrornis maxima*, pl. iii, fig. 9, p. 156, *bicolor*, on *Tantulus senegalensis*, p. 157, pl. iv, fig. 1, *rotundulatus*, on *Podoa senegalensis*, p. 159, pl. iv, fig. 2, *breviceps*, on *Camptolæmus cinereus*, p. 160, pl. iv, fig. 3, PIAGET, Tijdschr. Ent. xxxi, n. spp.

Menopon perule, note on ; LEIDY, P. Ac. Philad. 1888, p. 167.

M. pachypus, on *Sterna hirundo*, p. 161, pl. iv, fig. 4, PIAGET, Tijdschr. Ent. xxxi, n. sp.

Colpocephalum eurygaster, on *Leptoptilus argala*, p. 162, pl. iv, fig. 5, *tibiale*, on *Tantulus senegalensis*, p. 163, pl. iv, fig. 6, PIAGET, Tijdschr. Ent. xxxi, n. spp.

THYSANOPTERA.

[Cf. BERGROTH (62), JORDAN (423), OSBORN (646).]

Anatomy of *Physapus* (= *Thysanoptera*) ; JORDAN (423).

Thripida, food of ; OSBORN (646).

Phlaothrips angustifrons, Blumenau, BERGROTH, p. xxx, C.R. ent. Belg. xxxii, n. sp.

Thrips tabaci, Lind., injuries to tobacco, development ; LINDEMAN, Bull. Mosc. pp. 61-75.

TERMITIDÆ.

[Cf. GRASSI (330, 331, 332), TRYON (888).]

Notes on the White Ant found on the Bahamas (probably *Eutermes ripperti*) ; MAYNARD, Psyche, v, pp. 111-113.

Eutermes fumipennis, Hag., habits ; TRYON, P. R. Soc. Queensl. iv, p. 121.

Termes lucifugus and *Calotermes flavicollis*, relations of the sexes and various forms discussed ; GRASSI (330).

Calotermes flavicollis, sexual forms in ; GRASSI, Zool. Anz. xi, p. 63.

PSOCIDÆ.

[Cf. COSTA (164), KOLBE (449), ROSTOCK & KOLBE (778), SELYS (829).]
Structural and systematic characters and classification ; KOLBE, JB. Ver. Zwickau, 1887, pp. 171–178.

Troctes silvarum, Berlin, KOLBE, p. 234, Ent. Nachr. xiv, and JB. Ver. Zwickau, 1887, p. 192, n. sp.

Neopsocus rhenanus, Germany, KOLBE, JB. Ver. Zwickau, 1887, p. 18, n. sp.^o

Berthkaia prisca, Germany, KOLBE, JB. Ver. Zwickau, 1887, p. 188, n. sp.^o

Cerobasis muraria, Germany, KOLBE, JB. Ver. Zwickau, 1887, p. 190, n. sp.^o

Tichobia alternans, Westphalia, KOLBE, JB. Ver. Zwickau, 1887, p. 190, n. sp.^o

Cecilius abiectus, flavipennis, p. 16, redescribed ; COSTA, Atti Acc. Napoli (2) i, No. 13.

Psocus funerulus, redescribed ; COSTA, Atti Acc. Napoli (2) i, No. 13, p. 16.

Cyrtopsocus irroratus, redescribed ; COSTA, Atti Acc. Napoli (2) i, No. 13.

PERLIDÆ.

Perla myrmidon, Cape Horn, MABILLE, Miss. Sci. Cap Horn, p. 6, pl., fig. 3, n. sp.

EPHEMERIDÆ.

[Cf. COSTA (164), EATON (214), FRITZE (289), HAGEN (363), ROSTOCK & KOLBE (778), SELYS (829).]

Alimentary canal of ; FRITZE (289).

Synopsis of genera of British *Ephemeroidea* ; EATON (214).

Palingenia longicauda, Ol., *fuliginosa*, Boeb., *sibirica*, MacLach., notes on ; HAGEN, S. E. Z. xlix, pp. 221–225.

Oligoneuria anomala and *pallida*, Hag., noticed ; HAGEN, S. E. Z. xlix, p. 225.

Lachlania abnormis, ♀ character corrected ; HAGEN, S. E. Z. xlix, p. 226.

Euthyplocia burneisteri, note on ; HAGEN, S. E. Z. xlix, p. 226.

Canis pygmaea, Sardinia, COSTA, Atti Acc. Napoli (2) ii, No. 8, p. 28, n. sp.

Campsurus (? *dorsalis*), early stage noticed, p. 227, *wappæi*, Weyenb., descriptive note, p. 228, *decoloratus*, Hag., p. 229, *nappii*, Weyenb., p. 230, noticed ; HAGEN, S. E. Z. xlix.

* But cf. Zool. Rec. xix, Ins. p. 263.

C. amazonicus, Hag., ♂ described; HAGEN, S. E. Z. xlix, p. 230 (? n. sp.).
Polymitarceys virgo, Ol., *alba*, Say, *umbrata*, Hag., *australis*, Hag., notes on; HAGEN, S. E. Z. xlix, p. 231.

ODONATA.

[*Cf.* COSTA (164), GRIFFITHS (335), HAGEN (362), KISSLING (440), KOLBE (445), MABILLE (538), MARTIN (556), ROSTER (777), ROSTOCK (778), RUDOW (781), SELYS (828, 829).]

Synopsis of the *Odonata* of France; MARTIN, *Feuill. Nat.* xviii, pp. 31, 61, 99, 148, & 156.

Odonata of Tübingen; KISSLING (440).

Odonata of the Loo-Choo Is.; SELYS (828).

Fossil *Odonata*; DEICHMÜLLER (178): revising the Solenhofen forms with n. genu. (*cf.* Palæoentomology).

Libellulina.

HAGEN (362) discusses the claims of *Sympetrum*, *Orthetrum*, *Platetrum*, *Leptetrum*, Newman, and concludes they should not be adopted.

Diplaz, Charp., to be used in place of *Sympetrum*, Newm.; SELYS, *Ann. Ent. Belg.* xxxii, p. 134.

D. portoricana, Porto Rico, KOLBE, p. 168, *Arch. f. Nat.* liv, 1, n. sp.

Libellula quadrimaculata, migratory swarm of; PENDER, *Ent. M. M.* xxv, p. 93. *L. quadrimaculata*, L., and *fulva*, Müll., varieties of; RUDOW, *Soc. Ent.* iii, p. 124. *L. depressa*, malpighian tubes; GRIFFITHS (335): histology of muscles; RAMON (709).

Æschnina.

Gynacantha nervosa, Ramb., *robusta*, Er., *gracilis*, Burm., differential characters of; KOLBE, *Arch. f. Nat.* liv, 1, pp. 168-170.

Æschna diffinis, Ramb., figured and redescribed; MABILLE, *Miss. Sci. Cap Horn*, p. 3, pl., fig. 1.

Agrionina.

Enallagma civile, Hg., described, p. 170; KOLBE, *Arch. f. Nat.* liv, 1.

E. krugii, Porto Rico, KOLBE, *Arch. f. Nat.* liv, 1, p. 171, n. sp.

Catopteryx hemorrhoidalis, V. d. L., and *splendens*, Har., earlier stages of; ROSTER, *Bull. ent. Ital.* xx, pp. 162 & 163, pl. i.

Lestes viridis, V. d. L., *virens*, Charp., *barbara*, earlier stages of; ROSTER, *Bull. Ent. Ital.* xx, pp. 164 & 165, pl. iii.

Sympycna fusca, V. d. L., earlier stages of; ROSTER, *Bull. Ent. Ital.* xx, p. 166, pl. ii: hibernation of; SELYS, p. xxvii, *CR. ent. Belg.* xxxii, and MARTIN, *Rev. Sci. Bourb.* i, pp. 53-57.

Platycnemis pennipes, Pall., earlier stages of; ROSTER, *Bull. Ent. Ital.* xx, p. 167, pl. ii.

Agrion viduatum, *puella*, L., *lindenii*, Sel., *scitulum*, Ramb., earlier stages of; ROSTER, *Bull. Ent. Ital.* xx, pp. 168 & 169, pl. iv.

(G.) ORTHOPTERA.

[*Cf.* BOLIVAR (86), BORMANS (86, 88), BRUNNER (112), CAMBOUÉ (125), CAZURRO (139), COSMOVICI (163), COSTA (164), DOHRN (199, 200), FERNALD (268), HAIJ (357, 358), KARSCH (427, 428, 429, 430, 431), KIRBY (439), KRAUSS (470, 471), MAYET (564), NOVAK (627), RETOWSKI (734), RIGGIO (752), SAULCY (788), SAUSSURE (791, 792), SELYS (829), WOODWARD (938).]

The division of the order into four by Brauer discussed by GRASSI (329, p. 551), and not accepted.

Histology of muscles in *Blatta*, *Acridium*; RAMÓN (709).

Complete list of *Orthoptera* of Spain and Portugal; CAZURRO (139): of Belgium; SELYS (829).

Fossil *Orthoptera*; DEICHMÜLLER (178) and OPPENHEIM (642): *cf.* Palæontology, p. 79.

FORFICULIDÆ.

Forficula lesnei, Fin., note on; LESNE, p. ccvii, Bull. Soc. Ent. Fr. (6) viii.

Diplatys macrocephala, Palisot, recorded from Burma; BORMANS, Ann. Mus. Genov. (2) vi, p. 433.

Auchenomus birmanus, Bharno, BORMANS, Ann. Mus. Genov. (2) vi, p. 436, n. sp.

Chelisoches glaucopterus, Burma, BORMANS, Ann. Mus. Genov. (2) vi, p. 441, n. sp.

Anechura (*Forficula*) *scabriuscula*, Serv. = (*F. brachyrota* de Haan); BORMANS, p. 444, Ann. Mus. Genov. (2) vi. *A. ancylura*, Dohrn, n. var.; BORMANS, Ann. Mus. Genov. (2) vi, p. 445.

A. fecæ, Burma, BORMANS, Ann. Mus. Genov. (2) vi, p. 445; *A. elongata*, Cuba, *id.*, Mem. Soc. Z. Fr. i, p. 120: n. spp.

Labidura nigricornis, Christmas I., KIRBY, P. Z. S. 1888, p. 546, n. sp.

BLATTIDÆ.

Fossil Blattid; see KUSTA (482) and Palæontology, p. 80.

Aphlebia trivittata, note on the type; COSTA, Atti Acc. Napoli (2) i, No. 9, p. 50. *A. adusta*, Fisch., redescribed, p. 568, and figured, pl. xv, figs. 1a & b; KRAUSS, Verh. z.-b. Wien, xxxviii.

A. polita, West Caucasus, p. 569, pl. xv, figs. 2 & 2a, *retowskii*, Crimea, p. 570, figs. 3 & 3a, KRAUSS, Verh. z.-b. Wien, xxxviii, n. spp.

Ectobia germanica injurious to books and papers; Ins. Life, 1, p. 68. *B. germanica*, development of entoderm; CHOLODKOVSKY (145).

Periplaneta americana injurious to books and papers ; *Ins. Life*, i, p. 68.
P. orientalis, salivary glands and renal organs, and liver ; GRIFFITHS (336) : stink-glands, and structure of hypodermis ; MINCHIN (607).
 Bacteria-like bodies in eggs of *P. orientalis* and *Blatta germanica* ; BLOCHMANN (84).

Ischnoptera excisa, Cuba, BOLIVAR, Mem. Soc. Z. Fr. i, p. 124, n. sp.

Polyzosteria dimidiata, p. 125, *curaibea*, p. 126, Cuba, BOLIVAR, Mem. Soc. Z. Fr. i, n. spp.

Epitampra mexicana, n. var. *insularis* ; BOLIVAR, Mem. Soc. Z. Fr. i, p. 128.

E. cubensis, Cuba, BOLIVAR, p. 127, Mem. Soc. Z. Fr. i, n. sp.

Plectoptera micans, Cuba, BOLIVAR, Mem. Soc. Z. Fr. i, p. 129, n. sp.

Ectoblattina peachii, larvæ ; WOODWARD (938).

Nyctibora humeralis, Upp. Amazons, DOHRN, S. E. Z. xlix, p. 129, n. sp.

Gyna centurio, Cameroons, DOHRN, S. E. Z. xlix, p. 129, n. sp.

Panchlora najas, Upp. Amazons, DOHRN, S. E. Z. xlix, p. 130, n. sp.

Heterogamia saussurei, Taschkent, DOHRN, S. E. Z. xlix, p. 131, n. sp.

Homogamia sinensis, Sauss., referred to *Heterogamia*, ♀ described ; DOHRN, S. E. Z. xlix, p. 132.

MANTIDÆ and PHASMATIDÆ.

Ameles heldreichi, Brun, var. noticed ; RETOWSKI, Bull. Mosc. 1888, p. 405.

Mantis carinata, Jassy ; COSMOVICI, Bull. Soc. Z. Fr. xiii, p. 172, n. sp.

Clitumnus stilpnoides, Christmas I., KIRBY, P. Z. S. 1888, p. 547, n. sp.

Phantasis saussurei, p. 136, *lyrata*, p. 137, Cuba, BOLIVAR, Mem. Soc. Z. Fr. i, n. spp.

Caulonia poeyi, p. 137, *triedrica*, p. 138, Cuba, BOLIVAR, Mem. Soc. Z. Fr. i, n. spp.

Haplopus cubensis, Sauss., ♂ described ; BOLIVAR, Mem. Soc. Z. Fr. i, p. 140.

GRYLLIDÆ.

Grillon (sic) *campestris*, habits ; SAND, Le Nat. (2) ii, pp. 270 & 271.

Gryllodes panteli, N. Castille, CAZURRO, An. Soc. Esp. xvii, p. 461 ; *G. brunneri*, Sicily, RIGGIO, Nat. Sicil. vii, p. 110 : n. spp.

Gryllomorphus frugosoi, Bol., ♀ described ; RETOWSKI, Bull. Mosc. 1888, p. 414.

G. bolivari, Spain, CAZURRO, An. Soc. Esp. xvii, p. 463, n. sp.

Mogoplistes novaki, Island of Lesina, Dalmatia, KRAUSS, Wien. ent. Z. vii, p. 118, n. sp.

Phisis listeri, Christmas I., KIRBY, P. Z. S. 1888, p. 547, n. sp.

Cyrtosiphus gundlachi, p. 158, *vittatus*, *poeyi*, p. 159, Cuba, BOLIVAR, Mem. Soc. Z. Fr. i, n. spp.

Apithes irroratus, Cuba, BOLIVAR, Mem. Soc. Z. Fr. i, p. 161, n. sp.

Orochirus, n. g., for *O. pilosus*, n. sp., Cuba, and including *Apithes krugi*, Sauss. ; BOLIVAR, p. 162, Mem. Soc. Z. Fr. i.

LOCUSTIDÆ.

Platenia, n. g. (*Pseudophyllidæ*), p. 353, for *P. semialata*, n. sp., Palawan, p. 354, pl. ii, fig. 4; DOHRN, S. E. Z. xlix.

Panoploscelis, Scudder, discussed and redescribed, pp. 355–358, with description and figure of *P. armata*, Scud., p. 358, pl. ii, fig. 1; DOHRN, S. E. Z. xlix.

Cheroparnops, n. g. (*Pseudophyllidæ*), p. 359, for *C. hahneli*, *garleppi*, *platythorax*, *fulvus*, n. spp., Upp. Amazons, p. 360; DOHRN, S. E. Z. xlix.

Dicranostomus, n. g. (*Pseudophyllidæ*), p. 361, for *D. monoceros*, n. sp., Peru, p. 362, pl. ii, fig. 2; DOHRN, S. E. Z. xlix.

Pæcilimon tauricus, Crimea, RETOWSKI, Bull. Mosc. 1888, p. 408, n. sp.

Barbitistes berengueri, France, MAYET, p. cxi, Bull. Soc. Ent. Fr. (6) viii, n. sp.

Isophia taurica, Brunn., ♂ described; RETOWSKI, Bull. Mosc. 1888, p. 409.

I. brunneri, Crimea, RETOWSKI, Bull. Mosc. 1888, p. 410, n. sp.

Odontura calaritana, synonymical note; COSTA, Atti Acc. Napoli (2) i, No. 2, p. 88.

Leptophyes punctatissima, Bosc., fungoid disease of; GIARD, CR. Soc. Biol. (8) v, p. 787.

Phaneropterides, table of the genera from Africa, Madagascar, and the Seychelles; KARSCH, B. E. Z. xxxii, pp. 420–426.

Weissenbornia, n. g. (*Phaneropteridæ*), p. 65, for *W. præstantissima*, n. sp., W. Africa, p. 66; KARSCH, Ent. Nachr. xiv.

Corycus jurinei, Sauss., ♀ described; KARSCH, B. E. Z. xxxii, p. 415, woodcut.

Phyrama, n. g. (? *Prochilides* or *Mecopodiles*), p. 416, for *P. interjectum*, n. sp., Madagascar, p. 417, pl. iv, figs. 1 & 1a–d; KARSCH, B. E. Z. xxxii.

Peronura, n. g. (*Acrometopæ*), p. 426, for *P. clavigera*, Mombasa, pl. iv, fig. 2, *hildebrandtiuna*, Madagascar, fig. 3, n. spp., p. 427; KARSCH, B. E. Z. xxxii.

Conchotopoda, Karsch, corrected characters; KARSCH, B. E. Z. xxxii, p. 428.

Plegmatoptera, n. g. (*Acrometopæ*), for *P. reticulata*, n. sp., Tanganyika, pl. iv, fig. 4; KARSCH, B. E. Z. xxxii, p. 429.

Pantolepta, n. g. (*Acrometopæ*), p. 422, for *P. heteromorpha*, n. sp., Mombasa, pl. iv, figs. 5 & 5a, b, p. 430; KARSCH, B. E. Z. xxxii.

Anisotochra, n. g. (*Acrometopæ*), p. 430, for *A. gracilipes*, n. sp., W. Africa, p. 431; KARSCH, B. E. Z. xxxii.

Arantia regina, Gaboon, p. 434, *marmorata*, Congo, *excelsior*, Sierra Leone, p. 435, *accrana*, Accra, *hydatinoptera*, Beuna, p. 436, *retinereis*, p. 437, *simplicinervis*, p. 438, Trop. Africa, KARSCH, B. E. Z. xxxii, n. spp.

Pauræ, new group of *Phaneropterides* for the following:—

Paura, n. g., for *P. biramosa*, Usambara, pl. iv, fig. 6, p. 439, and *reticulosa*, Mombasa, p. 441 & fig. 7, n. spp.; KARSCH, B. E. Z. xxxii.

Dapinera, n. g. (*Psyræ*), for *D. genutereæ*, n. sp., Accra, KARSCH, p. 441 B. E. Z. xxxii.

Gonatoria, n. g. (*Pyra*), p. 441, for *G. immaculata*, Usambara, and *maculata*, Somaliland, u. spp., p. 442; KARSCH, B. E. Z. xxxii.

Zeuneria, n. g. (*Pyra*), for *Z. melanopeza*, n. sp., Cameroons; KARSCH, p. 443, B. E. Z. xxxii.

Phlaurocentra, new group of *Phaneropterides* for the following two n. gg. :—

Büttneria, n. g., p. 444, for *B. maculiceps*, n. sp., W. Africa, p. 445; KARSCH, B. E. Z. xxxii.

Phlaurocentrum, n. g., p. 445, for *P. latevittatum*, n. sp., W. Africa, p. 446; KARSCH, B. E. Z. xxxii.

Cedlicia afra, Benue, KARSCH, B. E. Z. xxxii, p. 446, n. sp.

Eucatopta, new group for the following genus :—

Eucatopta, n. g., p. 447, for *E. heringi*, n. sp., Madagascar, p. 448, pl. iv, figs. 8 a, b, c.; KARSCH, B. E. Z. xxxii.

Turpilia madagassa, Madagascar, KARSCH, B. E. Z. xxxii, p. 448, n. sp.

Dioncomena superba, E. Africa, KARSCH, B. E. Z. xxxii, p. 449, n. sp.

Symetroleura africana, Br., ♀ described; KARSCH, p. 450, B. E. Z. xxxii.

N. dirempta, Nossi-Bé, KARSCH, p. 451, B. E. Z. xxxii, n. sp.

Tylopsis inhamata, Delagoa Bay, KARSCH, p. 453, B. E. Z. xxxii, n. sp.

Otiaphyse, n. group of *Phaneropterides*, for the following genus :—

Otiaphysa, n. g., p. 453, for *O. hebetata*, n. sp., Usambara, p. 454, pl. iv, figs. 10 & 10a; KARSCH, B. E. Z. xxxii.

Eurycorypha brevipennis, Madagascar, *spinulosa*, Africa, KARSCH, p. 455, B. E. Z. xxxii, n. spp.

Plungia guttatipennis, Madagascar, *camerata*, Cameroons, KARSCH, p. 457, B. E. Z. xxxii, n. spp.

Monteiroa, n. g. (*Amblycoryphæ*), for *M. latifrons*, n. sp., Delagoa Bay; KARSCH, p. 458, B. E. Z. xxxii.

Plungiopsis, n. g. (*Steirodонтia*), p. 459, for *P. semiconchata*, n. sp., Cameroons, p. 460; KARSCH, B. E. Z. xxxii.

Megotoëssa, n. g. (*Steirodонтia*), p. 460, for *M. insulana*, n. sp., Madagascar, p. 461, pl. iv, fig. 11; KARSCH, B. E. Z. xxxii.

Cosmozoma, n. g. (*Steirodонтia*), for *C. doenitzi*, n. sp., Madagascar, pl. iv, fig. 12; KARSCH, p. 461, B. E. Z. xxxii.

Cyrtaspis scutata, Charp., stridulating organ described; KRAUSS, pp. 574–576, pl. xv, figs. 5 a–c, Verh. z.-b. Wien, xxxviii.

Amytta, n. g. (*Meconemide*), p. 160, for *A. pellucida*, n. sp., E. Africa, p. 161; KARSCH, Wien. ent. Z. vii.

Eriolus, n. g., p. 150, for *E. caribeus*, u. sp., Cuba, p. 151; BOLIVAR, Mem. Soc. Z. Fr. i.

Erechthis, u. g., for *E. gundlachi*, n. sp., Cuba; BOLIVAR, p. 151, Mem. Soc. Z. Fr. i.

Phlugis chrysopa, Cuba, p. 152, *nemoptera*, p. 153, *mantispa*, p. 154, Amazons Valley, *cephalotes*, Brazil, p. 155, BOLIVAR, Mem. Soc. Z. Fr. i, n. spp.

- Paradrymadusa galitini*, Crimea, RETOWSKI, Bull. Mosc. 1888, p. 411, n. sp.
- Pterolepis pedata*, Costa, note on characters of; COSTA, Atti Acc. Napoli (2) i, No. 13, p. 14.
- Ankylus capellei*, Monserrat, CAZURRO, Ann. Soc. Esp. xvii, p. 459, n. sp.
- Ctenodecticus costulatus*, Sardinia, COSTA, Atti Acc. Napoli (2) i, No. 2, p. 87, n. sp.
- Thamnotrizon ponticus*, Crimea, RETOWSKI, Bull. Mosc. 1888, p. 412, n. sp.
- Platycleis umbilicata*, Sardinia, COSTA, Atti Acc. Napoli (2) i, p. 15, n. sp.
- Mecopoda cyrtoscelis*, Segaar Bay, p. 146, *M. (Euthypoda) unguiculata*, Usambara, p. 147, KARSCH, Ent. Nachr. xiv, n. spp.
- Eugaster guyonii*, *spinulosus*, and *loricatus*, characters of; KARSCH, B. E. Z. xxxii, p. 462.
- Sagiens*: synopsis of; SAUSSURE (791).
- Saga serrata*, Fab., note on the distribution of; WACHTL, Wien. ent. Z. vii, p. 65.
- S. brunneri*, Asia Minor, p. 133, *ledereri*, p. 134, *lucasi*, p. 135, Syria, SAUSSURE, Ann. Soc. Ent. Fr. (6) viii, n. spp.
- Clonia tessellata*, S. Africa, SAUSSURE, p. 143, Ann. Soc. Ent. Fr. (6) viii, n. sp.
- Emptera*, n. g., for *Saga indica*, Herbst; SAUSSURE, p. 148, Ann. Soc. Ent. Fr. (6) viii.
- Hemisaga*, n. g., p. 148, for *H. hastata*, n. sp., S. Africa, p. 149; SAUSSURE, Ann. Soc. Ent. Fr. (6) viii.
- Peringueyella*, n. g., p. 150, for *P. jocosus*, n. sp., S. Africa, p. 152, pl. 5, figs. 1 & 2, and including *S. macrocephala*, Schaum.; SAUSSURE, Ann. Soc. Ent. Fr. (6) viii.
- Xiphosaga*, n. g., for *S. lutea*, Walk.; SAUSSURE, p. 154, Ann. Soc. Ent. Fr. (6) viii.
- Microsaga*, n. g., for *S. parvula*, Walk.; SAUSSURE, p. 154, Ann. Soc. Ent. Fr. (6) viii.
- Stenopelmatis*: monograph of, with bibliographical list, discussion of the affinities and position and various structural points, pp. 247-252; BRUNNER, Verh. z.-b. Wien, xxxviii.
- Stenopelmatus longispina*, p. 260, *californicus*, Vancouver, *irregularis*, N. America and Mexico, *hydrocephalus*, California, p. 261, *vicinus*, *guatemalæ*, Guatemala, p. 262, BRUNNER, Verh. z.-b. Wien, xxxviii, n. spp.
- Bugajus*, n. g., for *Anostostoma couloni*, Saus., which is figured, pl. v, fig. 2; BRUNNER, p. 264, Verh. z.-b. Wien, xxxviii.
- Oryctopus*, n. g., p. 266, for *O. bolivari*, n. sp., Madras, p. 267, pl. v, fig. 4; BRUNNER, Verh. z.-b. Wien, xxxviii.
- Deinacrida ligata*, New Zealand; BRUNNER, p. 268, pl. 5, fig. 5, Verh. z.-b. Wien, xxxviii, n. sp.
- Anostostoma opacum*, Queensland; BRUNNER, p. 271, Verh. z.-b. Wien, xxxviii, n. sp.
- Brachyporus*, n. g., for *B. personatus*, n. sp., Madagascar, pl. v, fig. 7; BRUNNER, p. 272, Verh. z.-b. Wien, xxxviii.

Schanobates alatus, Ecuador, *apterus*, Guatemala, pl. vi, fig. 8a, p. 274, *frater*, India ?, p. 275, BRUNNER, Verh. z.-b. Wien, xxxviii.

Carcinopsis, n. g., p. 275, for the following n. spp.: *unicolor*, *signata*, New Caledonia, p. 276, *ornata*, Madagascar, *femorialis*, p. 277, *fusca*, p. 278, Natal, BRUNNER, Verh. z.-b. Wien, xxxviii.

Aiatus, n. g., for *A. gracilis*, n. sp., New Caledonia, pl. vi, fig. 10; BRUNNER, p. 278, Verh. z.-b. Wien, xxxviii.

Gryllucropsis, n. g., for *G. perturbans*, n. sp., Madras, pl. vi, figs. 10 & 11; BRUNNER, p. 279, Verh. z.-b. Wien, xxxviii.

Dyscapna, n. g., for *D. atra*, n. sp., Angola, pl. vi, fig. 11; BRUNNER, p. 279, Verh. z.-b. Wien, xxxviii.

Borborothis, n. g., for *B. opaca*, n. sp., Cape, pl. vi, fig. 12; BRUNNER, p. 280, Verh. z.-b. Wien, xxxviii.

Trihoplophora, n. g., p. 280, for *T. abnormis*, n. sp., N. Australia, pl. vi, fig. 13, p. 281; BRUNNER, Verh. z.-b. Wien, xxxviii.

Hypocophus, n. g., for *H. fortior*, n. sp., Madagascar, pl. vi, fig. 14; BRUNNER, p. 281, Verh. z.-b. Wien, xxxviii.

Pherterus, n. g., for *P. brasiliensis*, n. sp., Brazil, and including *Rhaphidophorus cubensis*, de Haan; BRUNNER, p. 282, Verh. z.-b. Wien, xxxviii.

Apotetamenus, n. g., for *A. amazonæ*, Upp. Amazona, pl. vi, fig. 16, and *clipeatus*, Brazil, n. spp.; BRUNNER, p. 283, Verh. z.-b. Wien, xxxviii.

Glaphyrosoma, n. g., p. 283, for *Daihinia mexicana*, Sauss., and *G. gracile*, n. sp., Mexico, pl. vi, fig. 17; BRUNNER, p. 284, Verh. z.-b. Wien, xxxviii.

Mugrettia, n. g., for *M. abominata*, Suakim, *mutica*, pl. vi, fig. 18, Askahabad, n. spp.; BRUNNER, p. 285, Verh. z.-b. Wien, xxxviii.

Onosandrus crassipes, *saussurei*, p. 287, *opacus*, Cape, *humilis*, Madagascar, p. 288, BRUNNER, Verh. z.-b. Wien, xxxviii, n. spp.

Butleria, n. g., for *Anostostoma alatum*, Butl., pl. vii, fig. 21; BRUNNER, p. 289, Verh. z.-b. Wien, xxxviii.

Minnermus costulatus, Angola, BRUNNER, p. 290, Verh. z.-b. Wien, xxxviii, n. sp.

Platysiagon, n. g., for *P. signatus*, n. sp., W. Africa, pl. vii, fig. 23; BRUNNER, p. 292, Verh. z.-b. Wien, xxxviii.

Rhaphidophora mutica, Java, *crassicornis*, Australia, p. 295, *nigerrima*, Amboyna, *foeda*, New Guinea, pl. vii, fig. 25, p. 296, *fulva*, Java, *gracilis*, Philippines, p. 297, *deusta*, E. India, p. 298, BRUNNER, Verh. z.-b. Wien, xxxviii, n. spp.

Diastrammena, n. g., p. 298, for *D. unicolor*, Wladiwostok, *apicalis*, Japan, n. spp., p. 299, and *Rhaphidophorus marmoratus*, de Haan; BRUNNER, Verh. z.-b. Wien, xxxviii.

Neonetes, n. g., for *N. variegatus*, n. sp., New Zealand, pl. vii, fig. 27; BRUNNER, p. 300, Verh. z.-b. Wien, xxxviii.

Pachyrhamma, n. g., p. 301, for *Hadenæcus edwardsii*, Scudd., and *P. novæseelandiæ*, n. sp., N. Zealand, pl. vii, fig. 29, p. 302; BRUNNER, Verh. z.-b. Wien, xxxviii.

Gammarotettix, n. g., p. 304, for *G. californicus*, n. sp., California, pl. vii, fig. 32, p. 305; BRUNNER, Verh. z.-b. Wien, xxxviii.

Ceuthophilus unispinosus, nodulosus, pl. vii, fig. 33A, BRUNNER, p. 308, Verh. z.-b. Wien, xxxviii, n. spp.

Heteromallus, n. g., p. 310, for *H. notabilis*, pl. viii, fig. 35, *spina*, n. spp., Chili, p. 311; BRUNNER, Verh. z.-b. Wien, xxxviii.

Gryllacridæ: notes on the characters and arrangement of the group, with monograph of the genera and species; BRUNNER, Verh. z.-b. Wien, xxxviii, pp. 313-394, pla. viii & ix.

Gryllacris rufo-varia, Christmas I., KIRBY, P. Z. S. 1888, p. 548; *G. cyanea*, p. 326, *magnifica*, p. 327, Australia, *nigruta*, Sumatra, p. 328, *nigro-geniculata*, Manilla, *nigro-scutata*, Batavia, p. 330, *dimidiata*, New Britain, p. 331, *distincta*, hab. P., p. 332, *alternans*, Paebia, with var. *minor*, from E. India, *annulata*, Ceylon, Assam, p. 333, *vitata*, p. 334, *abbreviata*, atrata, India, *chinensis*, Hongkong, p. 335, *leta*, p. 337, *aliena*, Zanzibar, *hieroglyphica*, Ceylon, *deminuta*, Chiuu, p. 338, *deflorata*, *lutifrons*, India, p. 339, *fucifer*, Java?, *castanea*, Himalaya, *reticulata*, Ceylon, p. 340, *fulcata*, E. Asia, *purpura*, Java, p. 341, *inconspicua*, Malay Archipelago, *secpunctata*, Ceram, *navicula*, hab.?, p. 342, *spuria*, Ceylon, *laevigata*, p. 344, *cruenta*, p. 345, Upp. Amazona, *moesta*, Philippines, p. 346, *nastissima*, Moluccas, p. 347, *superba*, *soror*, Borneo, p. 348, *picea*, Comores Is., *luctuosa*, Sumatra, *voluptaria*, Celebes, p. 349, *athlops*, Sumatra, *eccelsus*, Duke of York I., p. 351, *appenliculata*, New Britain, p. 352, *obscura*, *variabilis*, pl. viii, fig. 40, *lugubris*, p. 353, Java, &c., *junior*, E. India, p. 354, *athleta*, Baeroë, p. 355, *aurantiaca*, Amboyna, New Britain, p. 356, *punctata*, Angola, *conspersa*, Malagascar, *quadripunctata*, Guinea, p. 357, *atriceps*, *stigmata*, Madagascar, *infumata*, Amboyna, p. 358, *straminea*, Adelaide, *ligata*, New Britain, p. 359, *debilis*, Australia, p. 361, *ferruginea*, Fiji, *exiguus*, New Caledonia, *hyalina*, *gemina*, p. 361, *major*, *adventus*, Australia, *africana*, W. Africa, p. 362, *sanguinolenta*, Madagascar, *abluta*, San Salvador, *picta*, Costa Rica, p. 363, *maculatus*, Chiriqui, *haitiensis*, Haiti, *nana*, Natal, p. 364, *fusciata*, Fernando Po, *nivea*, Madras, p. 365, *submutica*, Zanzibar, p. 366, BRUNNER, Verh. z.-b. Wien, xxxviii: n. spp.

Dibelona, n. g., for *D. brasiliensis*, Santo Paolo, p. 366, *cubensis*, Cuba, p. 367, n. spp., and including *G. rubrinervosa*, Serv.; BRUNNER, Verh. z.-b. Wien, xxxviii.

Hyperbena, n. g., p. 367, for *H. virgo*, Upp. Amazona, *juvenis*, Brazil, p. 368, *ensifer*, Peruambuco, p. 369, pl. ix, fig. 43; BRUNNER, Verh. z.-b. Wien, xxxviii.

Paragryllacris, n. g., p. 369, for *G. combusta*, Gerst., and the following new species from Australia: *infuscatus*, *callosa*, p. 371, *latelineolatus*, *exsertus*, *lobata*, p. 372, *modesta*, p. 373; BRUNNER, Verh. z.-b. Wien, xxxviii.

Nemius, n. g., p. 373, for *N. lobatus*, N. Guinea, l. c., pl. ix, fig. 45, *squamosus*, Ceylon, p. 374; BRUNNER, Verh. z.-b. Wien, xxxviii.

Eremus, n. g., p. 374, for the following new species: *nigrifrons*, p. 375, India?, *rugosifrons*, Chiuu, pl. ix, fig. 46, *geniculatus*, p. 376, *atroctectus*, India, *spinulosus*, Fiji I., p. 377, *muelleri*, Queensland, *fusco-terminatus*, China, p. 378, *brevifuscatus*, Africa, *marginatus*, Zambesi, p. 379, *exiguus*,

Madagascar, p. 380, and including *G. sphinx* and *glomeratus*, Gerst. ; BRUNNER, Verh. z.-b. Wien, xxxviii.

Neortus, n. g., p. 380, for *N. jamaicensis*, n. sp., Jamaica, p. 381, pl. ix, fig. 47, and *G. carolinensis*, Gerst. ; BRUNNER, Verh. z.-b. Wien, xxxviii.

Epacra, n. g., p. 381, for *E. aenea*, pl. ix, fig. 48, *modesta*, n. spp., Australia, p. 382 ; BRUNNER, Verh. z.-b. Wien, xxxviii.

Apotrechus, n. g., p. 383, for *G. ambulans*, Er., and *A. unicolor*, n. sp., Australia, p. 384, pl. ix, fig. 49 ; BRUNNER, Verh. z.-b. Wien, xxxviii.

Ametrus, n. g., p. 384, for *A. tibialis*, n. sp., Australia, p. 385, pl. ix, fig. 50 ; BRUNNER, Verh. z.-b. Wien, xxxviii.

Comicus, n. g., p. 386, for *C. capensis*, n. sp., Cape Good Hope, p. 387, pl. ix, fig. 50 ; BRUNNER, Verh. z.-b. Wien, xxxviii.

ACRIDIIDÆ.

External anatomy ; HALL (357).

Cyrtacanthacris disparilis, Christmas Is., KIRBY, P. Z. S. 1888, p. 549, n. sp.

Ochrilidia, Stål, = (*Brachycrotaphus*, Krauss), and *O. tryzalicera*, Fisch., Fr., = (*B. steindachneri*, Krauss), the position of the genus discussed, &c. ; KRAUSS, Verh. z.-b. Wien, xxxviii, pp. 571 & 572.

Parapleurus alliaceus, Germ., injurious in France ; GIARD, Le Nat. (2) ii, p. 203.

Stenobothrus : structure of the unfertilised egg ; LEYDIG (512). *S. variabilis*, Fieb., embryology ; GRABER (324).

S. grammicus, Guadarrama, CAZURRO, An. Soc. Esp. xvii, p. 457 ; *S. saulcyi*, E. Pyrenees, KRAUSS, Verh. z.-b. Wien, p. 573, pl. xv, figs. 4, 4a, b ; *S. lesinensis*, I. of Lesina, Dalmatia, *id.* Wien. ent. Z. vii, p. 117 : n. spp.

Orphula scudderi, Cuba, BOLIVAR, Mem. Soc. Z. Fr. i, p. 142, n. sp.

Stauronotus maroccanus in Algeria ; KUNCKEL (479) : egg-cases with parasites ; LUCAS, p. exciv, Bull. Soc. Ent. Fr. (6) viii.

Epacromia rufostriata, Christmas I., KIRBY, P. Z. S. 1888, p. 550, n. sp.

Primnia (?) *orientalis*, Christmas I., KIRBY, P. Z. S. 1888, p. 549, n. sp.

Revision of the Prodomus of *Oedipodiens*, with sketch of their geographical distribution, and tables of the genera ; SAUSSURE (792).

Arphia ovaticeps, Colorado, SAUSSURE, p. 165, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Tetramerotropis, n. g., p. 25, for *T. cruciata*, n. sp., Australia, pl. ii, fig. 2, p. 26 ; SAUSSURE, Mém. Soc. Phys. Genève. xxx, No. 1.

Ostracina, n. g., for *O. terrea*, n. sp., S. Africa ; SAUSSURE, p. 27, Mém. Soc. Phys. Genève. xxx, No. 1.

Phrynotettix peruviana, Peru, SAUSSURE, p. 30, pl. ii, fig. 8, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Brunnerella, n. g., for *B. mirabilis*, n. sp., Armenia, pl. ii, fig. 1 ; SAUSSURE, p. 31, Mém. Soc. Phys. Genève. xxx, No. 1.

Chlœbora grandidieri, Madagascar, SAUSSURE, p. 34, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Quiroguesia brullei n. var. *blanchardiana*; SAUSSURE, p. 85, Mém. Soc. Phys. Genève. xxx, No. 1.

Microscirtus (altered to *Mioscirtus* in errata, p. 175), n. g., for *Scinthariata wagneri*, Ev., and *venusta*, Fieb.; SAUSSURE, p. 36, Mém. Soc. Phys. Genève. xxx, No. 1.

Cosmorhynsa costata, S. Africa, SAUSSURE, p. 37, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Edaleus (*Gastrimargus*) *vitripennis*, S. Africa, SAUSSURE, p. 38, Mém. Soc. Phys. Genève. xxx, No. 1; *Æ. (G.) dohrnianus*, Transvaal, *id.* p. 166, t. c.: n. spp.

Ditlopternis cruciata, Australia, SAUSSURE, p. 45, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Heteropternis hyalina, Trop. Africa, SAUSSURE, p. 47, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Pycnodictya citripennis, Sierra Leone, SAUSSURE, p. 167, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Edipoda ledereri, Syria, SAUSSURE, p. 51, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Trachyrhachis, Saussure, = (*Mestobregma*, Scud.); SAUSSURE, p. 168, Mém. Soc. Phys. Genève. xxx, No. 1.

Meristopteryx, n. g., p. 52, for *Edipoda rotundata*, Walk., which is redescribed, p. 53, figured, pl. ii, fig. 3; SAUSSURE, Mém. Soc. Phys. Genève. xxx, No. 1.

Tinetonota tuberculosa, *verrucosa*, p. 56, *scabra*, *terrosa*, p. 57, S. Africa, SAUSSURE, Mém. Soc. Phys. Genève. xxx, No. 1, n. spp.

Conosoa rebellis, California, p. 61, *rogenhoferi*, Bagdad, p. 62, pl. ii, fig. 4, SAUSSURE, Mém. Soc. Phys. Genève. xxx, No. 1, n. spp.

Circolettix lobatus, N. America, SAUSSURE, p. 65, pl. ii, fig. 5, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Callirhipis, n. g., p. 66, for *C. davidiana*, n. sp., Mongolia, p. 67; SAUSSURE, Mém. Soc. Phys. Genève. xxx, No. 1.

Acrotylus furcifer, S. Africa, SAUSSURE, p. 69, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Charora, n. g. (possibly subg. of *Egnatius*), for *C. orussicenosæ*, n. sp., Caucasus; SAUSSURE, p. 71, Mém. Soc. Phys. Genève. xxx, No. 1.

Leptoscirtus, n. g., p. 72, for *L. aviculus*, Egypt, *unguiculatus*, Senegal, n. spp., p. 73; SAUSSURE, Mém. Soc. Phys. Genève. xxx, No. 1.

Sphingonotus cerulans, L., varr. noticed; RETOWSKI, Bull. Mooc. 1888, p. 406: var. *candidus*; COSTA, Atti Acc. Napoli (2) i, No. 9, p. 50.

S. bengalensis, India, *niloticus*, Egypt, p. 80, *brasiliæus*, Brazil, p. 81, *mongolicus*, Mongolia, p. 82, *japonicus*, Japan, p. 84, *intutus*, Persia, p. 87, SAUSSURE, Mém. Soc. Phys. Genève. xxx, No. 1, n. spp.

Leptopternis canescens, Egypt, SAUSSURE, p. 89, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Heliastus guatemalæ, Centr. America, SAUSSURE, p. 91, Mém. Soc. Phys. Genève. xxx, No. 1, n. sp.

Phanacrocerus, n. g., p. 96, for *P. testudo*, n. sp., Australia, p. 97, & pl. ii, fig. 9; SAUSSURE, Mém. Soc. Phys. Genève. xxx, No. 1.

Taphronota gabonica, Africa, KARSCH, p. 358, Ent. Nachr. xiv, n. sp.

Petusia impotens, Useigna, KARSCH, Ent. Nachr. xiv, n. sp.

Xiphocera bradyana, p. 156, pl. v, fig. 3, *bolivariana*, p. 158 & fig. 5, descriptions and figures ; SAUSSURE, Ann. Soc. Ent. Fr. (6) viii.

X. peringueyi, S. Africa, p. 157, pl. v, fig. 4, SAUSSURE, Ann. Soc. Ent. Fr. (6) viii, n. sp.

Mastax gundluchi, Scud., winged form described ; BOLIVAR, Mem. Soc. Z. Fr. i, p. 141.

Nichelius, n. g., near *Osmilia*, p. 144, for *N. fuscopictus*, n. sp., Cuba, p. 145 ; BOLIVAR, Mem. Soc. Z. Fr. i.

Caloptenus spretus, ravages of ; Ina. Life, i, p. 30.

Melanoplus spretus, *angustipennis*, and other locusts, habits noticed ; BRUNNER, in Riley Rep. 1887, pp. 167 & 168.

Tetrix kraussi, Germany, SAULCY, p. cxxxv, Bull. Soc. Ent. Fr. (6) viii, n. sp.

5. BEACHLER, CH. S. Crinoid Beds at Crawfordsville, Indiana. *Am. Nat.* xxi, No. 12, pp. 1106-1109.

List of Crinoids at locality, and literature.

6. BELL, F. J. Descriptions of Four new Species of Ophiurids. *P. Z. S.* 1888, iii, pp. 281-284, pl. xvi.

Diagnoses of *Pectinura ramsayi*, n. sp. [Port Jackson]; *P. capensis*, n. sp. [Cape of Good Hope], intermediate between *P. infernalis* and *P. heros*; *Ophiopora assimilis*, n. sp. [Port Jackson]; *Ophioglypha amphitrites*, n. sp. [Ecuador].

7. —. On the Echinodermata of the Sea of Bengal. *Rep. Brit. Ass.* 1888, p. 718.

8. —. Notice of a remarkable Ophiurid from Brazil. *Ann. N. H.* (6) i, 1888, pp. 368-370.

Immense length of arms relative to disc. Loss of upper surface of disc. Perhaps allied to genera *Ophionema* and *Ophionephthys*. *Ophionephthys sesquipetalis* (provisionally).

9. —. Notes on Echinoderms collected at Port Philip by Mr. J. Bracebridge Wilson. *Op. cit.* ii, 1888, No. xi, pp. 401-407.

Antedon wilsoni, n. sp. *Basicurva* group, div. II, related to *A. pusilla*. *A. incommoda*, n. sp., does not fall into Carpenter's groups. Possibly new species of *Ophiothrix*, *Amblypneustes*, *Strongylocentrotus*, *Molpadia*, and *Holothuria*.

10. BOURNE, G. C. (EDIT.). List of Echinodermata found in Plymouth Sound, &c. *J. Mar. Biol. Ass. Plym.* ii, pp. 167 & 168.

11. BROCK, J. Die Ophiuriden-fauna des indischen Archipels. *Z. wiss. Zool.* xlvii (3), pp. 465-539.

Diagnoses of all Ophiurids of district, including 3 new genera and 18 new species. List of all known Indo-Pacific Ophiurids, with their geographical distribution.

12. BURY, H. The Early Stages in the Development of *Antedon rosacea*. *Phil. Tr.* clxxix, 1888, pp. 257-301, pls. xliii-xlvii.

Agrees with Barrois' orientation and main account, but differs somewhat in respect to the body cavities.

13. CARPENTER, P. H. On Crinoids and Blastoids. *P. Geol. Ass.* x (1), pp. 19-28, 1 woodcut.

14. —. Report on the Crinoidea collected during the Voyage of H.M.S. 'Challenger.' Part II.—The *Comatulæ*. *Challenger Reports*, xxvi, pp. i-ix & 1-339, pls. i-xxx.

3 new genera and 90 new species. List of all known *Comatulæ*, with distribution, classification, &c.

15. COTTEAU, G. Echinides nouveaux ou peu connus. *Mem. Soc. Zool. Fr.* i (3), pp. 253-269, pls. viii & ix.

Diagnoses of 2 new species of *Salenia*, 1 *Cidaris*, 1 *Micropeltis*, 1 *Hemiasler*, 1 *Parasalenia*, 1 *Laganum*. For the most part from the Chalk.

16. [COTTEAU, G.] Note sur la famille des Brissidées. Bull. Soc. Z. Fr. xii, pp. 553-565.

An account of the *Brissidea* from the Eocene of France.

17. —. Echinides nouveaux ou peu connus. T. c. pp. 627-639, pls. ix & x.

Description of *Codiopsis regalis*, n. sp., Arnaud; *Maretia aragonensis*, n. sp., Cotteau; *Linthia aragonensis*, n. sp., Cotteau; *Cyclaster gourdoni*, n. sp., Cotteau; *Trachyaster* (P) *gourdoni*, n. sp., Cotteau; and definition of *Microlampas*, n. g. (*Cassidulidæ*), allied to *Echinolampas*, with n. sp. *M. conicus*.

18. —. Echinides éocènes d'Aragon (Espagne). C.R. Ass. Fr. Sci. 1887 (pub. 1888), pt. 2, pp. 518-523.

An account of the Tertiary Echinids from the Pyrenees, including descriptions of the following new genera and species: *Macropneustes*, n. sp., *Linthia*, n. sp., *Maretia aragonensis*, n. sp., *L. aragonensis*, *Trachyaster gourdoni*, n. sp., *Cyclaster gourdoni*, n. sp., *Microsoma conica*, n. g. & sp. (allied to *Echinolampas*).

19. —. Échinides éocènes de la province d'Alicante (Espagne). C.R. cvii, No. 25, pp. 976-978.

4 new genera: *Pygospatangus*, *Stomaporus* (Brissidées fam.), *Microlampas* (Cassidulidées fam.), *Radiocyphus* (Diadematiidées fam.). Irregular Echinoids preponderant. Full account in Mem. Soc. Geol.

20. CUVÉNOT, L. Études anatomiques et Morphologiques sur les Ophiures. Arch. Z. expér. 1888, i, pp. 32-82, pls. iii-v. Abstract in J. R. Mic. Soc., Dec. 1888, pp. 958-960.

The strands between the nerve-ring and digestive sac are composed solely of connective tissue fibrils and epithelial nuclei, with no trace of nerve elements, except in *Euryalida*. The muscle fibres described by Koehler in connection with the ambulacral vessels and Polian vesicles, are in reality connective tissue. The development of the sexual products is described, and a phylogenetic tree suggested.

21. DÖDERLEIN, L. Echinodermen von Ceylon. Bericht über die von den Herren Dres Sarasin gesammelten *Asteroidea*, *Ophiuroidea*, and *Echinoidea*. Zool. Jahrb. iii (Abth. f. Syst. Geog. Biol.), 1888, pp. 821-846, pls. xxxi-xxxiii.

Description of the collection and diagnoses of the following new species: *Disasterina ceylonica*, *Astropecten indicus*, and *A. tamilicus*.

22. DOLLO, L., & BUISSET, A. Sur quelques Paléchinides. C. R. cvi, No. 13, pp. 958-960.

Diagnosis of new genus *Koninckocidaris* (Lepidocentrid Perischoechinid); with *K. cotteaudi*, n. sp. Notice of 2 new species of *Lepidocentrida*: *L. dupontii* and *L. gaudryi*. Of 3 new species of *Melonitidæ*: — *Palæchinus*: *P. lorenii*, *P. agassizi*, and *P. carpenteri*. All occur in Carboniferous Limestone of Belgium.

23. DUNCAN, P. MARTIN. Note on the *Echinoidea* of the Cretaceous Series of the Lower Narbadá Valley, with remarks upon their Geological Age. *Rec. Geol. Surv. Ind.* xx, pp. 81-92, 1 pl.

Description of, and remarks on, *Cidaris namadicus*, n. sp., *Orthopsis indicus*, n. sp., and other species.

24. —. On some points in the anatomy of the *Temnopleuridae*. *Ann. N. H.* (6) i, 1888, pp. 109-131, pl. xi.

Family *Glyphostomata* becomes suborder of *Regulares*. The modern *Temnechinus* must be separated from *Temnopleurus*. Unique characters of ambulacra of *Microcyphus zigzag*, Agass.

25. ECK, H. Ein monstroses *Sphaerocrinus*. *Verh. Ver. Rheinl.* xlv, 1, pp. 110 & 111, 1 woodcut.

26. FEWKES, W. On the development of the calcareous plates of *Asterias*. *Bull. Mus. C. Z.* xvii, 1, pp. 1-52, pls. i-v.

The first plates to originate are the terminals. The dorsocentral originates after the genitals, before any plates on the actinal hemisphere. Genitals of *Asterias* are homologous with "basals" of *Amphiura*: 1st interbrachial (odontophore) with orals of *Amphiura*. Madreporic opening not in homologous plates in *Asterias* and *Amphiura*.

27. FLEISCHMANN, A. Die Entwicklung des Eies von *Echinocardium cordatum*. *Z. wiss. Zool.* xvi, 1888, pp. 131-142, pl. xiv.

Differs from Selenka, Bergh, and Greeff. "Segmentation is equal with polar differentiation."

28. GANONG, W. F. The *Echinodermata* of New Brunswick. *Bull. Nat. Hist. Soc. New Brunswick*, No. vii, 1888, pp. 12-68, with pl.

Bibliography and list of all known species of district, together with general, special, and bathymetrical distribution.

29. GAUTHIER, V. Types nouveaux d'Echiuïdes Crétacés. *C.R. Ass. Fr. Sci.* 1887 (pub. 1888), pt. 2, pp. 527-534, pl. xvi.

Senouian of Algeria. Diagnoses of 2 new genera: *Guettaria*, n. g. (allied to *Cardiaster*, Forbes), *G. angladei*, n. sp.; *Entomaster*, n. g. (allied to *Cardiaster*, Forbes), *E. rousseli*, n. sp.

30. GREPPIN, E. Description des Fossiles de la Grande Oolithe des Environs de Bâle. *Abh. schw. pal. Ges.* xv (3): *Echinodermata*, pp. 132-134.

Provisional new species: *Pentacrinus Basileæ*, n. sp.?

31. GRIFFITHS, A. B. Further researches on the Physiology of Invertebrates. *P. R. Soc.* xlv, 270, pp. 325-327.

The renal organs of the *Asteridea*. The five radial sacs of the stomach of *Uraster* contain uric acid.

32. HAMANN, OTO. Vorläufige Mitteilungen zur Morphologie der Crinoiden. *Nachr. Ges. Götting.* 1888, 5, pp. 127-131.

As regards the nervous system, the author supports Carpenter and Marshall, but is opposed to Jickeli, Perrier, and Vogt. The mesodermal œsophageal ring, with its branches, is phylogenetically a part of the epithelial nervous system which has come to lie in the connective tissue.

33. HEILPRIN, A. Contributions to the Natural History of the Bermuda Islands. P. Ac. Philad. pt. iii: *Echinodermata*, pp. 309-318, pls. xiv & xv.

Account of the species of the district, with diagnoses of the following new species:—*Holothuria abbreviata*, *Semperia bermudensis*, *Stichopus diaboli*, *S. xanthomela*.

34. HÉROUARD, E. Les Holothuries de Roscoff et de Banyuls-sur-mer. C.R. Ass. Fr. Sci. 1897 (pub. 1888), pt. 2, pp. 678-680.

Blood vascular system of *Colochirus lacazii*, n. sp., is described.

35. IVES, J. E. On two new species of Starfishes. P. Ac. Philad. 1888, pt. 3, pp. 421-424.

Diagnoses of *Pteraster tessellatus*, n. sp. (allied to *P. pulvillus*, Sars, and *P. semireticulatus*, Sars), and of *Coronaster bispinosus*, n. sp. (resembling *C. parvifitii*, Perrier, but possesses two spines on each adambulacral plate).

36. JICKELI, CARL F. Vorläufige Mittheilungen über das Nervensystem der Echinodermen. Zool. Anz. xi, No. 282, pp. 339-341.

The nervous system of Asterids consists of—(1) The ambulacral nervous system; (2) the subepithelial plexus; (3) the nerves of Lange; (4) the intestinal nervous system.

37. LAMBERT, J. Note sur un nouveau genre d'Echinide de la Craie de l'Yonne. Bull. Soc. Yonne, xlii (i), pt. 11, pp. 3-14.

New genus, *Gautheria*, founded for reception of *Gautheria* (*Cyphosoma*) *radiatum*. Discussion of the *Cyphosomata*.

38. LORIOL, P. DE. Sur les Échinides Crétacés du Portugal. C.R. Ass. Fr. Sci. 1887 (pub. 1888), pt. 2, pp. 515-517.

All specimens are from between Lower Neocomian and Upper Cenomanian. Regular Echinoids predominate. 52 new species in all. The cretaceous fauna of Portugal tends to unite that of Europe with that of N. Africa.

39. LOVÉN, S. On the species of *Echinoidea* described by Linnæus in his Work, Museum Ludovicæ Ulricæ. Bih. Sv. Ak. Handl. xiii, 4, No. 5, pp. 1-185, pls. i-ix.

Contains a list of the species of *Echinoidea* described by Linnæus, together with his original diagnoses, corrected and amended; also references to other works of Linnæus on the same subject, and subsequent alterations of more recent authors.

40. —. On a recent form of the *Echinoconidæ*. Op. cit. No. 11, pp. 1-25, pls. i & ii.

Description of mutilated *Pygastrides relictus*, n. g. & sp

41. LUDWIG, H. Die von Dr. J. Brock im Indischen Archipel gesammelten Holothuriern. Zool. Jahrb. (Abth. f. Syst. Geog. Biol.) iii, 1888, pp. 805-820, pl. xxx.

Description of Dr. Brock's collection and diagnoses of following new species:—*Aspidochirote*: *Holothuria*, n. sp. ? juv., *H. sluiteri*

(related to *H. modesta*, Ludw., and *H. martensii*, Semper), *H. pyxoides*, *H. olivacea*. *Dendrochirota*: *Phyllophorus brocki*. *Synaptida*: *Chirodota amboinensis* (related to *C. rigida*).

42. [LUDWIG, H.] *Ophiopteron elegans*, eine neue, wahrscheinlich schwimmende Ophiuriden form. Z. wiss. Zool. xlvii, 3, pp. 459-464, pl. xxxv.

Each arm-joint has a pair of fins, composed of thin transparent membrane. The spines on the dorsal side of the disc are modified by being prolonged into five or six processes distally, which are united by a thin membrane, the whole giving rise to a number of funnel-shaped structures, which together cause a velvety down. New genus *Ophiopteron*, most nearly allied to *Ophiothrix*.

43. MALAGOLI, M. Note paleontologiche sopra un *Astrogononium* ed una *Chirodota* del pliocene. Atti Mem. Soc. Mod. (3) vii, p. 69, pl. ii.

Account of *Astrogonium* sp., and *Chirodota elegans*, n. sp.

44. MILLER, S. A. A new genus of Crinoids from the Niagara group. Am. Geol. i, 5, p. 263.

Diagnosis of *Siphonocrinus*, n. g., containing species *S. (Glyptocrinus) nobilis* and *S. (Eucalyptocrinus, Glyptocrinus, Hall) armosus*.

45. NOVÁK, O. Studien an Echinodermen der Böhmischen Kreideformation. I. Die Irregulären Echiniden der Cenomanstufe. Abh. böhm. Ges. vii, ii, 2, pp. 1-47, pls. i-iii.

Contains an elaborate review of the work of previous authors, and descriptions of the species of Irregular Echinoids of the formation, including two, as yet unnamed, new species of the family *Echinoconidae*, viz., *Pygaster* sp. (allied to *P. truncatus*), and *Echinoconus* sp. (allied to *E. subrotundus*).

46. PERRIER, E. Sur la collection d'Étoiles de mer recueillie par la Commission scientifique du Cap Horn. C.R. cvi, No. 11, pp. 763-765.

Establishes the following new genera:—*Iriplasterias*, *Asteroderma*, *Poraniopsis*, *Cribraster*, *Lebrunaster*, *Asterodon*. *Poraniopsis* is intermediate between *Echinaster* and *Porania*. *Cribraster* and *Lebrunaster* lead up to *Ganeria*. *Asterodon* must be removed from *Goniasteridae* and placed among the *Archasteridae*. It includes—*Astrogonium singulare*, Müll. & Trosch.; *A. meridionale*, Smith; *Pentagonaster belli*, Studer; *Cultiderma grayi*, Bull; and *Asterodon pedicellaris*, n. sp., and *A. granulatus*, n. sp. Extract in Rev. Sci. (3) xli, No. 12, p. 379; transl., Ann. N. H. (6) i, pp. 384-386.

47. POMEL, A. Notes d'Echinologie synonymique. Bull. Soc. Géol. (3), xvi, 6, pp. 441-453.

A protest against the erroneous use by Cotteau and others of the names *Anisaster confusus*, Pom.; *Plagiobrissus*, Pom.; *Hypsopatagus* and *Liopatagus*, Pom.; *Echinopatagus*, Breyn; *Schizaster*, Agassiz. A new genus, *Pliolampus*, is to be formed, to include the species previously described under *Plesiolampus*, Pom., that name being restricted to the

genus founded by Duncan & Sladen. *Tiarella*, Pom., claims precedence over *Plesiodiadema*, Duncan. An amended definition of *Fibularia* is given, with a brief discussion on the Clypeastrids.

48. [POMEL, A.] Sur le *Thagastea*, nouveau genre d'Echinide éocène d'Algérie, et observations sur le groupe des Fibulariens. C.R. cvi, No. 5, pp. 373 & 374.

Description of genus, and of *Thagastea wetterlei*, n. sp. *Echinocyami* are to be separated from the *Fibularia* and included with the *Scutellinia*. Short account of *Echinolampus goujoni*, n. sp., and of *Opisaster thagastensis*, n. sp.

49. ROEMER, F. *Macraster*, eine neue Spatangoiden-Gattung aus der Kreide von Texas. JB. Mineral. 1888, 1 Bd., 3 Hft., pp. 191-195, pl. vi.

Most nearly related to *Micraster* and *Epiaster*. *M. texanus*, n. sp.

50. ROSOLL, A. Über zwei neue an Echinodermen lebende parasitische Copepoden. *Ascomyzon conatula* und *Astericola clausii*. SB. Ak. Wien, 97 Bd., 1 Abth., pp. 188-202, pls. i & ii.

51. SARASIN, P. & F. Die Längsmuskeln und die Stewart'schen Organe der Echinothuriden. Zool. Anz. 1888, No. 273, pp. 115-117.

52. —. Ueber die Niere der Seeigel. *Op. cit.* No. 277, pp. 217 & 218.

53. —. Ergebnisse Naturwissenschaftlicher Forschungen auf Ceylon, 1884-1886. I, i, 1887. Die Augen und das Integument der Diadematischen, pp. 1-18, pls. i-iii. Ueber zwei Parasitische Schnecken, pp. 19-31, pls. iv & v.

The "ocular plates" are devoid of pigment; but there are numerous blue spots on the surface of the body, with a more or less definite arrangement. These spots have faceted corneæ and pigmented crystalline cones, but no sense-cells nor nervous connection. The blood vascular system is stated to be in open communication with the outer world. The authors describe a new species, *Astropyga freudenbergi*. Two parasitic Molluscs, *Stilifer linckia*, *Thyca entroconcha*, n. sp., were found on a *Linckia*.

54. —. Ergebnisse Naturwissenschaftlicher Forschungen auf Ceylon, 1884-1886. I, ii, 1888. Knochenbildung bei *Linckia multifora* (Lamarck), pp. 73-78, pl. ix.

55. —. Ergebnisse Naturwissenschaftlicher Forschungen auf Ceylon, 1884-1886. I, iii, 1888. Ueber die Anatomie der Echinothuriden und die Phylogenie der Echinodermen, pp. 83-154, pls. x-xvii.

Complete description of *Asthenosoma urens*, n. sp., related to *A. grubei*. Stewart's organs are very largely developed, and probably of purely mechanical significance. Perrier's "ovoid gland" proves to be nephridial, the ureter opening through the madreporic perforations. There are numerous nephridial funnels opening into the coelom. Abstr. in J. R. Micr. Soc., Dec. 1888, pp. 956-958, and in Zool. Anz. xi, 1888, p. 115.

56. SCHLUMBERGER, —. Note sur les *Holothuridées* du Calcaire grossier. Bull. Soc. Géol. (3) xvi, 6, pp. 437-441, 14 woodcuts.

Description of the plates of the following fossil forms:—*Synapta eocæna*, Schl. (n. sp.); *Chirodota undulata*, Schl. (n. sp.); *Thyonidium*, sp. ?; *Stueria*, Schl. (n. g.), sole species, *S. elegans*, Schl. (n. sp.).

57. SEMON, R. Die Entwicklung der *Synapta digitata* und ihre Bedeutung für die Phylogenie der Echinodermen. Jen. Z. Nat. xxii, i, ii, pp. 175-309, pls. vi-xii.

An adoral band of cilia is present. The extent of the adoral band differs in the various groups of *Echinodermata*, and the "Pluteus arms" are not to be considered as homologous throughout. The origin of the nervous system is described, the account of the histology being at variance with that of Metschnikoff. The larval nervous system forms the nerve-ring of the adult. All Echinoderm nervous systems are probably derived by precocious segregation from the ciliated bands. A full account of the history of the coelomic sacs and water-vascular system is given. The homologies of the tentacular vessels, radial water-vascular canals, and pieces of the calcareous ring require to be reconsidered. The coelom does not extend into the tentacles. The phylogeny of the *Holothuria* and of the *Echinodermata* generally is discussed. The *Echinodermata* are to be derived from an ancestral form, "*Pentactæa*," resembling the *Pentactula* larva of *Synapta*. The Echinoderm classes may be grouped—(1) *Angiochirota* (Holothuroids); (2) *Achirota* (Echinoids); (3) *Celomachirota* (Crinoids, Ophiurids, and Asterooids).

58. SLUITER, C. PH. Die Evertibraten aus der Sammlung des Königl. Naturwissenschaftlichen Vereins in Niederländisch Indien in Batavia. Nat. Tijdschr. Nederl. Ind. xlvii, pp. 181-220, pls. i & ii. Echinoderms, pp. 184-220.

List of species of district, with diagnoses of 12 new species.

59. STORM, V. *Solaster echinatus*, n. sp., illigamed Oversigt over de i Throndhjemsfjorden fundne Asteroider. Nor. Selsk. Skr. 1886-1887, pp. 58-64, 1 pl.

List of Asterids found in Throndhjems fjord, and diagnosis of *Solaster echinatus*, n. sp.

60. TOULA, F. Ueber *Aspidura raibiana*, n. sp. SB. Ak. Wien, 96 Bd., 1 Abth. pp. 361-369, 1 pl.

Contains list of Triassic Ophiurids.

61. VOGT, WALTER. *Entocolax ludwigii* ein neuer seltsamer Parasit aus einer Holothurie. Z. wiss. Zool. xlvii, 4, pp. 658-688, pls. xli-xliii.

A Prosobranchiate Gastropod of the suborder *Cochlosyringia*, parasitic on a Holothurian.

62. VUILLEMIN, P. *Cidaris grandævus*, Goldf., dans le Muschelkalk inférieur. Bull. Soc. Nancy (2) vi, 16, p. vi.

The first Echinoid reported from the Trias of France.

63. WACHSMUTH, C., & SPRINGER, F. *Crotalocrinus*: its Structure and Zoological Position. P. Ac. Philad. 1888, pt. 3, pp. 364-390, pls. xix & xx.

Crotalocrinus and *Enallocrinus* are to be included in the same family, *Crotalocrinidae*, which is connected through *Marsupiocrinus* with the other *Camaruta*. Diagnoses of *Crotalocrinidae* and its component genera are given.

64. —. Discovery of the ventral surface of *Taxocrinus* and *Haplocrinus*, and consequent modifications in the classification of the *Crinoidea*. T. c. pp. 337-363, pl. xviii.

Haplocrinus possesses no "central plate." Anus lies within upper angle of triangular depression on the posterior plate, and is sometimes closed by numerous plates. The apparent "central" of many *Platycrinidae* and *Actinocrinidae* is really the posterior oral thrust inwards by anal structures. The names *Palaocrinoidea* and *Neocrinoidea* must be laid aside. A new classification is suggested. A diagnosis is given of the *Ichthyocrinidae*.

II. SUBJECT-INDEX

TO LIST OF PUBLICATIONS.

DISTRIBUTION.

Throndhjems fjord, STORM.	Bengal Sea, BELL (7).
'Challenger' Stations, CARPENTER (14).	Cape Horn, PERRIER.
Azores, BARROIS, TH.	Batavia, SLUITER.
Indian Archipelago, BROCK, LUDWIG (41).	New Brunswick, GANONG.
Ceylon, SARASIN (53, 54, 55).	Amboina, LUDWIG (41).
	Caribbean Sea, LOVÉN, S. (40).
	Bermuda, HEILPRIN.

MORPHOLOGY.

GENERAL ANATOMY.

- Holothuroidea*, v. sub. SLUITER, BELL (9), HEILPRIN, HÉROUARD, LUDWIG (41).
Echinoidea, v. sub. IVES, BELL (9), LOVÉN (40), DÜDERLEIN, DUNCAN (24), LOVÉN (39).
Crinoidea, HAMANN, BELL (9), CARPENTER (14).
Ophiuroidea, BELL (9), DÜDERLEIN, LUDWIG (42), BELL (8, 6), CUÉNOT.
Asteroidea, DÜDERLEIN, STORM, PERRIER.

SKELETAL SYSTEM.

- Holothuroidea*, SEMON. *Asteroidea*, FEWKES.
Crinoidea, CARPENTER (14).

NERVOUS SYSTEM.

- Holothuroidea*, SEMON. *Asteroidea*, JICKELI.
Crinoidea, HAMANN.

RENAL ORGANS.

Echinoidea, SARASIN (52, 55). *Asteroidea*, GRIFFITHS.

MUSCULAR AND STEWART'S ORGANS.

Echinoidea, SARASIN (51).

EYES AND INTEGUMENT.

Echinoidea (*Diadematida*), SARASIN (53).

VASCULAR SYSTEM.

Holothuroidea, HÉROUARD, SEMON.

EMBRYOLOGY.

Holothuroidea, SEMON. *Crinoidea*, BURY, BARROIS, J.
Echinoidea, FLEISCHMANN. *Asteroidea*, FEWKES.

PHYSIOLOGY.

Asteroidea, GRIFFITHS.

PHYLOGENY.

SARASIN (55), SEMON, CARPENTER (15), WACHSMUTH & SPRINGER (64).

MISCELLANEA.

PARASITISM—VOIGT, ROSOLL, SARASIN (53).

GEMMATION—SARASIN (54).

FOSSIL FORMS.

Holothuroidea, MALAGOLI, SCHLUMBERGER.

Ophiuroidea, TOULA.

Asteroidea, MALAGOLI.

Crinoidea, BEACHLER, CARPENTER (13), ECK, MILLER, GREPPIN,
 WACHSMUTH & SPRINGER (63, 64).

Echinoidea, COTTEAU (15, 16, 17, 18, 19), DUNCAN (23), DOLLO &
 BUISSET, GAUTHIER, LAMBERT, LORIOU, NOVÁK, ROEMER, POMEL
 (47, 48), VUILLEMIN.

III.—CLASSIFICATION.

SEMON proposes the following groups :—

- I. *Angiochirota* = *Holothuria* : retain the primitive relation of the tentacular to the somatic region.
- II. *Achirota* = Echinoids : tentacular region aborted.
- III. *Cœlomachirota* = Crinoids, Ophiurids, and Asteroids : the cœlomic region has extended into the tentacular region.

WACHSMUTH & SPRINGER (64) discard the terms *Paleo-* and *Neocrinoidea*, and suggest as the classification of the *Crinoidea* :—

1. *Camarata*.
 2. *Inadunata*.
(a) *Larviformia*. (b) *Fistulata*.
 3. *Articulata*.
(a) *Ichthyocrinidæ*.
 4. *Canaliculata* (including most of the mesozoic and recent Crinoids).
- CARPENTER (14) classifies as follows :—

Class CRINOIDEA.

Order NEOCRINOIDEA.

Family *Comatulidæ* (amended 1888, Carpenter).

Genus I. *Thaumatocrinus*.

Genus II. *Atelecrinus*.

Genus III. *Eudiocrinus*.

Genus IV. *Antedon*.

Basicurva group.

Acæla group.

Eschrichti group.

Tenella group.

Milberti group.

Spinifera group.

Palmata group.

Granulifera group.

Savignyi group.

Genus V. *Actinometra* (amended).

Solaris group.

Paucicirra group.

Typica group.

Echinoptera group.

Stelligera group.

Valida group.

Fimbriata group.

Parvicirra group.

Genus VI. *Promachocrinus*.

IV.—SYSTEMATIC.

HOLOTHUROIDEA.

Holothuria abbreviata, n. sp., HEILPRIN.

Holothuria osurroga, n. sp., SLUITER.

Holothuria, n. sp. ? juv., LUDWIG (41).

Holothuria sluiteri, n. sp., *id.*

Holothuria pyroides, n. sp., *id.*

Holothuria olivacea, n. sp., *id.*

Holothuria ?, BELL (9).

Stichopus diaboli, n. sp., HEILPRIN.

- Stichopus xanthomela*, n. sp., *id.*
Stichopus levis, n. sp., SLUITER.
Stichopus vastus, n. sp., *id.*
Semperia bermudensis, n. sp., HEILPRIN.
Colochirus scandens, n. sp., SLUITER.
Colochirus lacazii, n. sp., vascular system; HÉROUARD.
Thyone papillata, n. sp., SLUITER.
Phyllophorus brocki, n. sp., LUDWIG (41).
Molpadia ?, BELL (9).
Haplodactyla punctata, n. sp., SLUITER.
Stueria, n. g., (Cretaceous), SCHLUMBERGER.
Stueria elegans, n. sp., *id.*
Chirodota amboinensis, n. sp., LUDWIG (41).
Chirodota elegans, n. sp. (Pliocene), MALAGOLI.
Chirodota undulata, n. sp. (Cretaceous), SCHLUMBERGER.
Anapta subtilis, n. sp., SLUITER.
Synapta striata, n. sp., *id.*
Synapta lactea, n. sp., *id.*
Synapta kallipeplos, n. sp., *id.*
Synapta psara, n. sp., *id.*
Synapta cocæna, n. sp., SCHLUMBERGER.

ECHINOIDEA.

- Asthenosoma urens*, n. sp., SARASIN (55).
Astropyga freudenbergi, n. sp., *id.* (53).
Radiocyphus, n. g., COTTEAU (19).
Temnopleurus separated from *Temnechinus*, DUNCAN (24).
Cidaris namadicus, n. sp., *id.* (23).
Cidaris kiliani, n. sp., COTTEAU (15).
Koninckocidaris, n. g., DOLLO & BUISSET.
Koninckocidaris cotteaudi, n. sp., *id.*
Palæchinus lorénei, n. sp., *id.*
Palæchinus agassizi, n. sp., *id.*
Palæchinus carpenteri, n. sp., *id.*
Salenia loveni, n. sp., COTTEAU (15).
Salenia lundgreni, n. sp., *id.*
Arthopsis indicus, n. sp., DUNCAN (23).
Codiopsis regalis, n. sp., COTTEAU (17).
Maretia aragonensis, n. sp., *id.* (17 and 18).
Macropneustes, n. sp. ?, *id.* (18).
Linthia aragonensis, *id.* (17 and 18).
Linthia, n. sp. ?, *id.* (18).
Gautheria, n. g., LAMBERT.
Gautheria radiatum, n. sp., *id.*
Guettaria, n. g., GAUTHIER.
Guettaria angladei, n. sp., *id.*
Entomaster, n. g., *id.*

- Entomaster rousseti*, n. sp., *id.*
Trachyaster gourdoni, n. sp., COTTEAU (17 and 18).
Cyclaster gourdoni, n. sp., *id.*
Pteraster tessellatus, n. sp., IVES.
Coronaster bispinosus, n. sp., *id.*
Pygaster, n. sp. ?, NOVÁK.
Pygastrides, n. g., LOVÉN (40).
Pygastrides relictus, n. sp., *id.*
Echinoconus, n. sp. ?, NOVÁK.
Pygospalungus, n. g., COTTEAU (19).
Hemiasper rignoti, n. sp., *id.* (15).
Opisaster thagastensis, n. sp., POMEL (48).
Thagastea wetterlei, n. sp., *id.*
Macraster, n. g., ROEMER.
Macraster texanus, *id.*
Stenaporus, n. g., COTTEAU (19).
Microlampas, n. g., *id.* (17 and 19) ; *M. conicus*, n. sp. (17).
Pliolampas, n. g., POMEL (47).
Plesiolampas, amended genus ; *id.*
Fibularidae, amended genus ; *id.*
Echinolampas, n. sp. ?, *id.* (48).
Microsoma, n. g., COTTEAU (18).
Microsoma conica, n. sp., *id.*
Micropellis kunkeli, n. sp., *id.* (15).
Parasalenia fontannesii, n. sp., *id.*
Laganum kumaranense, n. sp., *id.*
Lepidocentridus duponti, n. sp., DOLLO & BUISSET.
Lepidocentridus gaudryi, n. sp., *id.*
Strongylocentrotus, n. sp. ?, BELL (9).
Amblypneustes, n. sp. ?, *id.*
Poraniopsis, n. g., PERRIER.
Cribraster, n. g., *id.*
Lebrunaster, n. g., *id.*

CRINOIDEA.

- Antedon wilsoni*, n. sp., BELL (9).
Antedon incommoda, n. sp., *id.*
Antedon fluctuans, n. sp., CARPENTER (14).
Antedon multiradiata, n. sp., *id.*
Antedon longicirra, n. sp., *id.*
Antedon valida, n. sp., *id.*
Antedon incerta, n. sp., *id.*
Antedon gracilis, n. sp., *id.*
Antedon lusitanica, n. sp., *id.*
Antedon breviradia, n. sp., *id.*
Antedon spinicirra, n. sp., *id.*
Antedon acutiradia, n. sp., *id.*
Antedon bispinosa, n. sp., *id.*

- Antedon latipinna*, n. sp., *id.*
Antedon multispina, n. sp., *id.*
Antedon echinata, n. sp., *id.*
Antedon basicurva, n. sp., *id.*
Antedon incisa, n. sp., *id.*
Antedon tuberosa, n. sp., *id.*
Antedon parvipinna, n. sp., *id.*
Antedon flexilis, n. sp., *id.*
Antedon aculeata, n. sp., *id.*
Antedon denticulata, n. sp., *id.*
Antedon pusilla, n. sp., *id.*
Antedon acela, n. sp., *id.*
Antedon discoidea, n. sp., *id.*
Antedon antarctica, n. sp., *id.*
Antedon australis, n. sp., *id.*
Antedon rhomboidea, n. sp., *id.*
Antedon quadrata, n. sp., *id.*
Antedon hystrix, n. sp., *id.*
Antedon exigua, n. sp., *id.*
Antedon alternata, n. sp., *id.*
Antedon lineata, n. sp., *id.*
Antedon remota, n. sp., *id.*
Antedon longipinna, n. sp., *id.*
Antedon tenuicirra, n. sp., *id.*
Antedon laevis, n. sp., *id.*
Antedon hirsuta, n. sp., *id.*
Antedon angustipinna, n. sp., *id.*
Antedon abyssorum, n. sp., *id.*
Antedon abyssicola, n. sp., *id.*
Antedon anceps, n. sp., (dimorph of *Sarignyi*). *id.*
Antedon parvicirra, n. sp., *id.*
Antedon informis, n. sp., *id.*
Antedon balanoides, n. sp., *id.*
Antedon quinquecostata, n. sp., *id.*
Antedon lusitanica, n. sp., *id.*
Antedon patula, n. sp., *id.*
Antedon robusta, n. sp., *id.*
Antedon compressa, n. sp., *id.*
Antedon manca, n. sp., *id.*
Antedon disciformis, n. sp., *id.*
Antedon clemens, n. sp., *id.*
Antedon marginata, n. sp., *id.*
Antedon tuberculata, n. sp., *id.*
Antedon conjungens, n. sp., *id.*
Antedon similis, n. sp., *id.*
Antedon occulta, n. sp., *id.*
Antedon angusticalyx, n. sp., *id.*
Antedon inaequalis, n. sp., *id.*
Antedon distincta, n. sp., *id.*

- Antedon multispina*, n. sp., *id.*
Antedon porrecta, n. sp., *id.*
Antedon angustiradia, n. sp., *id.*
Antedon quinduplicara, n. sp., *id.*
Actinometra, amended genus, CARPENTER (14).
Actinometra distincta, n. sp., *id.*
Actinometra multibrachiata, n. sp., *id.*
Actinometra maculata, n. sp., *id.*
Actinometra stelligera, n. sp., *id.*
Actinometra elongata, n. sp., *id.*
Actinometra simplex, n. sp., *id.*
Actinometra valida, n. sp., *id.*
Actinometra sertosa, n. sp., *id.*
Actinometra lineata, n. sp., *id.*
Actinometra quadrata, n. sp., *id.*
Actinometra divaricata, n. sp., *id.*
Actinometra belli, n. sp., *id.*
Actinometra duplex, n. sp., *id.*
Actinometra nobilis, n. sp., *id.*
Actinometra littoralis, n. sp., *id.*
Actinometra regalis, n. sp., *id.*
Promachocrinus (Carpenter, 1879), *id.*
Promachocrinus kerguelensis, n. sp., *id.*
Promachocrinus abyssorum, n. sp., *id.*
Promachocrinus narensi, n. sp., *id.*
Thaumatoocrinus (Carpenter, 1883), *id.*
Atelecrinus (Carpenter, 1881), *id.*
Atelecrinus balanoides, n. sp., *id.*
Atelecrinus wyvillii, n. sp., *id.*
Eudiocrinus (Carpenter, 1882), *id.*
Eudiocrinus varians, n. sp., *id.*
Eudiocrinus semperi, n. sp., *id.*
Eudiocrinus japonicus, n. sp., *id.*
Taxocrinus and *Haplocrinus*, ventral surface of; WACHSMUTH & SPRINGER (64).
Ichthyocrinidae, diagnosis of; *id.*
Crotalocrinidae, diagnosis of; *id.* (63).
Pentacrinus basileæ, n. sp. ? (Bather), GREPPIN.
Sphaerocrinus sp. ?, ECK.
Siphonocrinus, n. g., includes *S. (Glyptocrinus) nobilis*, and *S. (Eucalyptocrinus, Glyptocrinus, Hall) armosus*, MILLER.

OPHIUROIDEA.

- Aspidura raiblana*, n. sp., TUGLA.
Pectinura ramsayi, n. sp., BELL (6).
Pectinura cupensis, n. sp., *id.*
Ophioplepis irregularis, n. sp., BROCK.
Ophioglypha indica, n. sp. (*O. stellata*), *id.*

- Ophioglypha amphitritites*, n. sp., BELL (6).
Ophiopeza assimilis, n. sp., *id.*
Ophioconis cincta, n. sp., BROCK.
Ophiactis modesta, n. sp. (*O. maculata*, v. Mart.), *id.*
Amphiura ochroleuca, n. sp., *id.*
Amphiura fuscoalba, n. sp., *id.*
Amphiura olivacea, n. sp., *id.*
Ophiocnida alboriviridis, n. sp. (*O. pilosa*, Lym.), *id.*
Ophionereis sophiae, n. sp., *id.*
Ophionereis fusca, n. sp., *id.*
Ophiarachna clavigera, n. sp. (*O. affinis*, Lützk.), *id.*
Ophiomastix pusilla, n. sp., *id.*
Ophiomastix elegans, n. sp., *id.*
Ophiiothrix tenera, n. sp., *id.*
Ophiiothrix, n. sp. ?, BELL (9).
Ophiopteron, n. g., LUDWIG (42), BROCK.
Ophiopteron elegans, n. sp., *id.*; *id.* [*Lütkenia cataphracta*, BROCK.]
Ophiæthiops, n. g., BROCK. (*Ophiolophus*, Markt.)
Ophiæthiops unicolor, n. sp., *id.*
Ophiosphæra, n. g., BROCK (*Ophiogymna*).
Ophiosphæra insignis, n. sp., *id.*
Ophiomyxa longipeda, n. sp., *id.*
Ophionephthys sesquipedalis ?, BELL (8).

ASTEROIDEA.

- Diplasterias*, n. g., PERRIER.
Asteroderma, n. g., *id.*
Asteroodon, n. g., *id.*
Asteroodon pedicellaria, n. sp., *id.*
Asteroodon granulosus, n. sp., *id.*
Astrogonium, n. sp. ?, MALAGOLI.
Disasterina ceylonica, n. sp., DÜDERLEIN.
Astropecten indicus, n. sp., *id.*
Astropecten tamilicus, n. sp., *id.*
Solaster echinatus, n. sp., STORM.

VERMES.

BY

P. CHALMERS MITCHELL, M.A. (ABERDEEN), B.A. (OXON.).

-
- I.—INTRODUCTION.
 II.—LIST OF PUBLICATIONS.
 III.—REFERENCES. SYSTEMATIC CLASSIFICATION.
 IV.—REFERENCES. SUBJECT-MATTER CLASSIFICATION.
-

I.—INTRODUCTION.

THE numerous workers at this great group are gradually bringing into it coherence and order. The position of our knowledge up to 1888 is summed up by JACKSON, in "Forms of Animal Life," p. 585, 2nd edition (Oxford: Clarendon Press). The *Enteropneusta* are a very distinct class, with possible Vertebrate affinities. The *Chaetopoda*, *Archannelida*, and *Gephyrea*, except *Priapulidae*, are more or less closely related, and not far removed from them are the *Hirudinea*. The *Trematoda*, *Cestoda*, and *Turbellaria* form a natural group. The *Rotifera*, *Nemertea*, *Chaetognatha*, *Nematoda*, *Acanthocephala*, and the smaller groups, are all isolated.

The phylogenetic work of 1888 is, for the most part, on the same lines. SCHIMKEWITSCH throws doubt on the Vertebrate affinities of *Enteropneusta*. But APÁTHY, BEDDARD, COLLIN, SPENCER, and others strengthen the coherence of the first great group (*Chaetopoda*), which BEDDARD, SPENCER, and others suggest is of Platyhelminth derivation.

Elaborate monographic work has been done by APÁTHY, SAINT-JOSEPH, EHLERS, and others; and equally elaborate are the anatomical memoirs of BOS (*Tylenchus*), MEYER, and WIRÉN (*Polychæta*).

20 new genera [*Bothrioneuron*, *Brachydrilus*, *Deinodrilus*, *Dichogaster*, *Diplocardia*, *Enchytreoides*, *Lophochæta*, *Teleudrilus*, *Vetrocermis* (*Oligochæta*); *Auchenoplax*, *Euarche*, *Labrostratus* and *Lipobranchius*, *Parumarphysa*, *Potamis*, *Protis*, *Rhamphobranchium* (*Polychæta*); *Asplanchnopus* (*Rotifera*); *Haplodiscus* (*Cestoda*); *Prothelminx* (*Nematoda*)] and 168 new species have been described.

II.—LIST OF PUBLICATIONS.

ADUCCO, V. La sostanza colorante rossa dell' *Eustrongylus gigas*. Atti (Rend.) Acc. Rom. iv, pp. 187 & 213.

ANON. Hydatids of the Brain. Brit. Med. J. 1888, ii, p. 442.

APÁTHY, S. (1) Analyse der äusseren Körperform der Hirudineen. MT. z. Stat. Neap. viii, p. 153. Abstract in J. R. Micr. Soc. 1888, p. 950.

— (2) Systematische Streiflichter. 1. Marine Hirudineen. Arch. f. Nat. 1888, I, i, p. 43.

The characters of the *Rhynchobdellidæ* and the *Gnathobdellidæ*; diagnoses of the genera *Pontobdella* and *Calliobdella*; and characters of *C. nigra*, n. sp.

— (3) Süßwasser-Hirudineen. Zool. Jahrb. iii, p. 725.

A systematic essay on the fresh-water Leeches, with 1 n. sp., *Clepsine concolor*.

BEDDARD, F. E. (1) Observations on an Annelid of the Genus *Æolosoma*. P. Z. S. 1888, p. 213.

On *Æolosoma headleyi*, n. sp., obtained in an English tank. The oil-globules are green and more abundant than in *Æ. variegatum*. Many pairs of nephridia are present, and the first nephridium lies in the first setigerous segment.

— (2) Report on Annelids from the Mergui Archipelago, collected for the Trustees of the British Museum, Calcutta, by Dr. John Anderson, F.R.S. J. L. S. xxi, p. 256.

With *Eupompe indica*, n. sp. (figs.), *Chloeia merguiensis*, n. sp. (figs.), *Branchiomma intermedium*, n. sp. (figs.), and an account of structure of eyes in *C. merguiensis*.

— (3) Further Notes on the Reproductive Organs of *Eudrilus*. Zool. Anz. 1888, p. 643.

There are two pairs of ovaries, enclosed in a muscular sheath continuous with the oviduct, and the two oviducts of each side open opposite each other into the spermathecal duct.

— (4) The Nephridia of Earthworms. Nature, xxxviii, p. 221.

The nephridia of *Perichæta* and *Megascolides* support LANG'S view of the derivation of segmental organs of segmented Worms from the network in unsegmented *Vermes*.

— (5) On the Structure of Three New Species of Earthworms, with Remarks on certain points in the Morphology of the *Oligochaeta*. Q. J. Micr. Sci. xxix, p. 101.

Acanthodrilus annectens, n. sp., from New Zealand. *Deinodrilus benhami*, n. g. & sp., from New Zealand. *Typhæus gammii*, n. sp., from Darjeeling.

The structure and homologies of the so-called prostate glands are discussed.

[BEDDARD, F. E.] (6) Preliminary Notes on the Anatomy of *Perichæta*. Zool. Anz. 1888, p. 91.

— (7) On the Reproductive Organs of *Phreoryctes*. Ann. N. H. 1888, vol. i, p. 387.

There are two pairs of testes, and the four vasa deferentia open independently; there are no atria; there are two pairs of ovaries and oviducts.

— (8) Preliminary Note on the Mucous Gland of *Urochæta*. Zool. Anz. 1888, p. 90.

— (9) Worms. Encycl. Brit. 9th edition, 1888.

An anatomical account of the *Oligochæta*, with many woodcuts.

— (10) On certain points in the Structure of the *Urochæta*, E. P., and *Dichogaster*, n. g., with further Remarks on the Nephridia of Earth-worms. Q. J. Micr. Sci. xxix, p. 235.

Integument in *Urochæta* is non-vascular. The "mucous gland" of Perrier is nephridial, and has three funnels. The female generative organs are described. *Dichogaster*, n. g., is described, and the evolution of the various Oligochæte excretory systems from a general nephridial network is discussed.

BENEDEN, E. VAN. Fertilization and Segmentation in *Ascaris megalocephala*. J. R. Micr. Soc. 1888, p. 423.

Abstract of paper in Bull. Ac. Belg. xiv (1887).

BENHAM, W. B. (1) British Earthworms. Nature, xxxviii, p. 319.

An *Allurus* from Hyde.

— (2) Note on a New Earthworm. Zool. Anz. 1888, p. 72.

Brachydrilus, n. g., locality unknown, possesses two pairs of nephridia in each somite.

BERANGER-FÉRAUD, L. J. B. Leçons cliniques sur les Ténias de l'homme. Paris: 1888.

BERGH, R. S. (1) Zur Bildungsgeschichte der Excretionsorgane bei *Criodrilus*. Arb. Inst. Würzb. viii, p. 223.

The segmental organs from the somatic mesoblast and the successive nephridia are entirely separate in development. The terminal portion bores through the epiderm cells to the exterior. Then follows a discussion of the various theories of the origin of the excretory system in Annelids. There are in *Criodrilus* a pair of primitive larval excretory organs formed of hollowed cells.

— (2) Excretory Organs of *Criodrilus*. J. R. Micr. Soc. 1888, p. 953.

Abstract of paper in Arb. Inst. Würzb. 1888.

BIEHRINGER, J. Neuere Arbeiten über Anatomie u. Entwicklungs-geschichte der Trematoden. Biol. Centralbl. viii, p. 230.

No. I. Arbeiten zur Anatomie.

BLANC, HENRI. (1) Sur le système excréteur des *Oxyures*. Arch. Sci. Nat. xx, p. 347.

Each of the four excretory tubes opens into the body cavity by a non-ciliated aperture. Compared with segmental tubes of Annelids.

— (2) *Tænia saginata* et *Bothriocephalus latus* avec anneaux perforés Bull. Soc. Vaud. xxiv, p. 9.

— (3) Sur le *Tænia saginata* et le *Bothriocephalus latus*. Arch. Sci. Nat. xx, p. 347.

— (4) Cysticerque du *Tænia solium*. T. c. p. 367.

Extracted from the left eye of a patient.

BLANCHARD, R. (1) Les ennemis de l'espèce humaine. Rev. Sci. (rev. rose) 1888, p. 545.

A popular lecture; deals chiefly with *Nematodes*.

— (2) L'Ankylostome duodénal et l'anémie des mineurs. Op. cit. xli, p. 701.

BLANCHARD, F. Intestinal Worms in Cats. Am. Mier. J. 1888, p. 232.

24 *Ascaris mystax*, and several *Tænia*s (sp. undet.), removed from a cat, in Peacham, U.S.

BOLLINGER, —. Ueber *Cysticercus cellulosæ* im Gehirn. SB. Ges. Morph. iv, p. 45.

BOS, J. RITZEMA. (1) L'Anguillule de la Tige (*Tylenchus devastatrix*, Kühn) et les maladies des Plantes dues à ce Nématode. Arch. Mus. Teyl. ser. ii, vol. iii, p. 162.

A full account of the anatomy of the form, and a discussion of its systematic position and economical importance. A bibliography of Nematode embryology is given.

— (2) Untersuchungen über *Tylenchus devastatrix*, Kühn. Biol. Centralbl. viii, p. 129.

Part iv.—The plant-diseases caused by *Tylenchus devastatrix*.

— (3) Untersuchungen über *Tylenchus devastatrix*, Kühn. T. c. p. 164. On Worms in onions.

BOURNE, A. G. The Vascular System of the *Hirudinea*. Zool. Anz. 1888, p. 16.

Criticism of Maurice Jaquet in the Naples Mittheilungen, vol. vi.

BOURNE, G. C. Kleinenberg on the Development of *Lopadorhynchus*. Q. J. Mier. Sci. xxviii, p. 531.

An abstract of Kleinenberg's paper.

BRANDES, G. (1) Helminthologisches. Arch. f. Nat. 1888, p. 247.

Distomum clariforme, n. sp., from rectum of *Tringa alpina*. *D. turgidum*, n. sp., from small intestine of *Rana*.

[BRANDES, G.] (2) Ueber das Genus *Holostomum*, Nitzsch. Zool. Anz. 1888, p. 424.

A preliminary note. The sucker on the concave side is *dorsal*, not ventral.

BRANDT, ED. Zwei Fälle von *Tenia cucumerina*, Rud., beim Menschen. T. c. p. 481.

This *Tenia* found twice in human subjects, in a practice of fifteen years.

BRAUN, M. (1) Ueber parasitische Schnurwürmer. CB. Bakt. Parasit. iii, pp. 16 & 36.

A review of the parasitic Nemertines and Rhynchocoela.

——. (2) Die *Myzostomida*. Zusammenfassender Bericht. T. c. p. 183.

BRUNOTTI, C. Recherches sur la Structure de l'œil chez un *Branchiourme*. C.R. 1888, i, p. 301. Abstract in J. R. Micr. Soc. 1888, p. 219.

The eyes on the branchial filaments are compound; the author distinguishes between outer dioptric and inner nervous structures.

BÜRGER, O. Beiträge zur Kenntniss des Nervensystems der Nemertinen. Nachr. Ges. Götting. 1888, p. 479.

A preliminary note of results obtained about the nervous system of Indian and European Nemertines.

CAMERANO, L. (1) Ricerche intorno al parassitismo ed al polimorfismo dei *Gordii*.

Abstract in Am. Nat. xxii, p. 462.

——. (2) *Gordius feæ*, n. sp. Ann. Mus. Genov. 1888, p. 168.

——. (3) Ricerche intorno alla Anatomia ed Istologia dei *Gordii*. Boll. Mus. Zool. Anat. Comp. Torino, iii, No. 33.

A preliminary note, with a genealogical tree of the *Vermes*.

CARNOY, J. B. Polar Bodies in *Ascaris*. J. R. Micr. Soc. 1888, p. 48.

Abstract of paper in La Cellule.

CHATIN, J. (1) Des diverses Anguillules qui peuvent s'observer dans la Maladie Vermineuse de l'Oignon. C.R. 1888, i, p. 1431.

Tylenchus putrifaciens, *Pelodera strongyloides*, *Leptodera terricola*.

——. (2) Des diverses Anguillules qui peuvent s'observer dans la Maladie Vermineuse de l'Oignon. J. Microgr. xii, p. 290.

In diseased onions *Tylenchus putrifaciens*, *Pelodera strongyloides*, and *Leptodera terricola* may be found. The disease is caused by the *Tylenchus*, and the others penetrate only a very short distance into the bulb until it has been quite broken down by the ravages of its real enemy.

[CHATIN, J.] (3) Sur la structure des téguments de l'*Heterodera schachtii* et sur les modifications qu'ils présentent chez les femelles fécondées. C.R. 1888, ii, p. 139. Abstract in J. R. Micr. Soc. 1888, p. 738.

— (4) Sur la Maladie vermiculaire de l'Oignon. C.R. Soc. Biol. v, p. 159.

COLLIN, A. (1) *Criodrilus lacuum*, Hoffm. Ein Beitrag zur Kenntnis der Oligochæten. Z. wiss. Zool. xlv, p. 471. Abstract in J. R. Micr. Soc. 1888, p. 733.

A full account of the anatomy of the form; confirms Rosa as to the near relations of *Criodrilus* with the *Lumbricidae*.

COSMOVICI, L. C. Le système nerveux de Chétoptères (*Chatopterus valencinii*). Rev. Sci. (rev. rose.) xli, p. 669.

CRAGIN, F. W. First Contribution to Knowledge of Lower *Invertebrata* of Kansas. Bull. Washb. Coll 1887, p. 8.

CUNNINGHAM, J. T., & RAMAGE, G. A. The *Polychæta sedentaria* of the Firth of Forth. Tr. R. Soc. Edinb. xxxiii, p. 635.

A monograph was intended, but the authors were unable to complete it. One new genus, *Lipobranchius* (p. 655).

DANYSZ, J. Recherches sur un *Tenia* fenêtré. J. de l'Anat. Phys. xxiv, p. 518.

Perforations of varying extent occurred in a *Tenia saginata*. A fatty deposit occurred under the cuticle, and the author suggests that this disease of the Tape-Worm prevented its resisting the action of digestion.

DIMMOCK, G. A *Sphærulearia*-like Worm. Psyche, v, Nos. 141 & 142, p. 14.

On *Atractonema gibbosum*, Leuckart.

DEVOLETZKY, R. Lateral Organs of Nemerteans. [Abstract.] J. R. Micr. Soc. 1888, p. 51.

EHLERS, E. Report on the Annelids of the Dredging Expedition of the U.S. Coast Survey Steamer 'Blake.' Mem. Mus. C. Z. xv, 60 pls. Many new species and 6 new genera.

FENWICK, H. Bilharzial epicystitis. Brit. Med. J. 1888, i, p. 468.

FERGUSON, J. Epileptiform seizures caused by *Oxyurides vermiculares* in an adult. T. c. p. 1056.

FOL, H. Sur la répartition du tissu musculaire strié chez divers Invertébrés. C.R. 1888, i, p. 1178.

Chatognatha and some Annelids have striated muscles.

FRAIPONT, J. *Polygordius*. J. R. Micr. Soc. 1888, p. 225.

Abstract of monograph xiv of Naples Station.

FRIEDLÄNDER, B. (1) Beiträge zur Kenntniss des Centralnervensystems von *Lumbricus*. Z. wiss. Zool. xlvii, p. 47.

An elaborate anatomical and histological memoir.

— (2) Ueber das Kriechen der Regenwürmer. Biol. Centralbl. viii, p. 363.

Experiments on the relation of the nervous system to progression in Earthworms.

GARMAN, H. On the Anatomy and Histology of a New Earthworm (*Diplocardia communis*, n. g. & sp.). Bull. Illin. Lab. N. H. iii, p. 47.

With a list of N. American Earthworms.

VAN GEHUCHTEN, A. Observations sur la vésicule germinative et les globules polaires de *Ascaris megalocephala*. Tag. Deut. Nat. Vers. 1887, p. 250.

GOEHLICH, GUSTAV. Ueber die Genital- u. Segmental-Organe von *Lumbricus terrestris*. Zool. Beitr. ii, p. 133.

To effect impregnation two acts of copulation are required and three Worms are concerned. Worm A passes spermatozoa into the spermathecae of Worm B; then B, copulating with C, passes the spermatozoa into the oviducts of C.

GRASSI, B. (1) Beiträge zur Kenntniss des Entwicklungscyclus von fünf Parasiten des Hundes. [*Tenia cucumerina* (Goeze), *Ascaris marginata* (Rud.), *Spiroptera sanguinolenta* (Rud.), *Filaria immitis* (Leidy), und *Haematozoon* (Lewis).] CB. Bakt. Parasit. iv, p. 609.

— (2) Nachtrag zu meinem Aufsätze "Beiträge zur Kenntniss des Entwick.," &c. T. c. p. 776.

— (3) Weiteres zur Frage der *Ascaris*-Entwicklung. Op. cit. iii, p. 748.

— (4) *Tenia flaropunctata*, Wein., *Tenia leptcephala*, Creplin, *Tenia diminuta*, Rud. Atti Acc. Tor. xxiii, p. 492.

Reasons for regarding the three names as synonyms.

—, & CALANDRUCCIO, S. (1) Bandwürmerentwicklung. CB. Bakt. Parasit. iii, p. 174.

Experiment proving that *Tenia elliptica* of the Dog may have *Pulex serraticeps* as intermediate host.

— & —. (2) Ueber einen *Echinorhynchus* welcher auch im Menschen parasitirt und dessen Zwischenwirth ein *Blaps* ist. T. c. p. 521.

Echinorhynchus unusually abundant in *Mammalia* in Sicily. E. ? n. sp. in small intestine of Dog. E. *moniliformis*, Bremsen, or E. n. sp., found in *Mus decumanus* and *Myoxus quercinus*, experimentally became adult in Man.

— & ROVELLI, —. (1) La *Bilharzia* in Sicilia. Atti (Rend.) Acc. Rom. iv, p. 799.

[GRASSI, B., & ROVELLI, —.] (2) Intorno allo sviluppo dei Cestodi.
Nota preliminare. *T. c.* p. 700.

Preliminary note on development of *Tænia elliptica*.

— & —. (3) Bandwürmerentwicklung. *CB. Bakt. Parasit.* iii,
p. 173.

Results of experiments on development of *Tænia proglottidina* and
Bothriocephalus latus.

GROBEN, C. Die Pericardialdrüse der Chætopoden Anneliden, nebst
Bemerkungen über die perienterische Flüssigkeit derselben. *SB.*
Ak. Wien, xcvi, p. 251.

The appendages of the blood vessels in *Polychæstes* and *Oligochæstes*,
coated with chloragogenous cells, are excretory organs of the body
cavity.

GUERNE, J. DE. Monographic note on the *Rotifera* of the Family
Asplanchnidæ. *Ann. N. H.* 1888, ii, p. 28.

Translated from the Prince of Monaco's "Excursions Zoologiques dans
les îles de Fayal et de San Miguel (Açores)." Genus *Asplanchna*, with 4
new species, genus *Asplanchnopus*, n. g., and genus *Ascomorpha* are
described.

HEAPE, WALTER. *Vermes* in the Plymouth Sound. *J. Mar. Biol. Ass.*
of United Kingdom, ii, p. 168.

HEYMANN, J. F. Nerve endings in the Leech. *J. R. Micr. Soc.* 1888,
p. 957.

Abstract of paper in *Arch. Anat. Phys.* 1888.

HOOD, JOHN. Chats about Rotifers. *Sci. Goss.* Feb. 1888, p. 27.

HORST, R. (1) Descriptions of Earthworms. iv. *Acanthodrilus beddardi*.
n. sp.: a remarkable Earthworm from Liberia. *Notes Leyd. Mus.* x,
p. 123.

The "penial" setæ possess a ridged cup with strong hooks; there are,
in addition, "copulatory setæ" of peculiar structure.

— (2) Anatomie von *Rhinodrilus*. *Tijdschr. Nederl. Dierk. Ver.* (2)
i, afl. 3 & 4.

— (3) Mr. Cunningham on the "Cardiac Body." *Zool. Anz.* 1888,
p. 135.

HUGHES, PROF. Exhibition of *Steropus madidus* and Earthworm. *P.*
Cambr. Phil. Soc. vi, p. 245.

The Worm had been seized near the posterior end by the larva, and
appeared partially paralyzed.

I., E. A new parasite in American Sheep. *Field*, 1888, p. 924.

A *Tænia*.

LIJIMA, —. Some European Tricladæ. *J. R. Micr. Soc.* 1888, p. 229.

Abstract of paper in *Journ. Coll. Tokyo*, 1887.

- IMHOF, O. Ein neues Mitglied der Tiefsee-fauna der Süßwasserbecken. Zool. Anz. 1888, p. 48.

A new genus, *Vetrocermis*, allied to *Ctenodrilus*. From St. Moritz.

- JOYEUX-LAFFITE, J. Sur le système nerveux du Chétopode. C.R. 1888, i, p. 148. Abstract in J. R. Micr. Soc. 1888, p. 225.

- KENNEL, J. (1) Untersuchungen an neuen Turbellarien. Zool. Jahrb. iii, p. 447.

On *Planaria alpina*, Dana, found in cold streams near Würzburg. On *P. aurita*, n. sp., and *P. fissipara*, n. sp., from Trinidad; with an account of asexual reproduction in the latter. The rods in Tricladæ and some Rhabdocoelæ cannot be homologised with the nettle-cells of Cœlenterates. They lie, not in the epithelium, but in the sub-epithelial connective tissue, and are bodily discharged on pressure. An account of three Rhabdocoelæ from Trinidad: *Mesostoma ehrenbergii*, *Stenostoma bicaudatum*, n. sp., and *Prorhynchus applanatus*, n. sp.

—. Die Ableitung zunächst der sog. einfachen Augen der Arthropoden, nämlich der "Stemmata," der Insecten larven, Spinnen, Scorpioniden, &c., von Augen der Anneliden. SB. Ges. Dorp. viii, p. 405.

- KNÜFFER, P. Beitrag zur Anatomie des Ausführungsganges der weiblichen Geschlechtsproducte einiger Acanthocephalen. Mém. Ac. Petersb. xxxvi, No. 12.

Includes a description of *Echinorhynchus pseudo-segmentatus*, n. sp., from *Spermophilus citellus*.

- KIEHLER, R. Structure of *Echinorhynchi*. J. R. Micr. Soc. 1888, p. 422. Abstract of paper in Zool. Anz. 1888.

- KÜKENTHAL, W. Beobachtungen am Regenwurm. Biol. Centralbl. viii, p. 80.

From experiments on the Earthworm by feeding with carmine and indigo, author concluded that solid matter was not excreted by the nephridia.

- KULAGIN, N. Zur Anatomie und Systematik der in Russland vorkommenden Fam. Lumbricidæ. Zool. Anz. 1888, p. 231.

A preliminary note.

- KULTSCHITZKY, N. (1) Die Befruchtungsvorgänge bei *Ascaris megalocephala*. Arch. mikr. Anat. xxxi, p. 567.

The polar bodies are formed by a true process of karyokinesis. The spermatozoon, during the formation of the polar bodies, decreases in size by losing not only its protoplasm, but some of its chromatin; so that the ♂ pronucleus is not formed of all the chromatin of the spermatozoon. The author opposes Hertwig's view of impregnation as the fusion

of the pronuclei. He corroborates Van Beneden's observation that the pronuclei do not fuse, and holds that impregnation is complete when the ♂ pronucleus is fully formed.

[KULTSCHITZKY, N.] (2) Ueber die Eireifung u. die Befruchtungsvorgänge bei *Ascaris marginata*. *Op. cit.* xxxii, p. 671.

The penetration of the spermatozoon into the ovum depends more on the ovum protoplasm than on the movements of the spermatozoon. The polar bodies are separated off by a true process of karyokinesis.

——. (3) Ergebnisse einer Untersuchung über die Befruchtungsvorgänge bei *Ascaris megalcephala*. *SB. Ak. Berl.* 1888, i, p. 17.

Abstract of conclusions in above memoir.

——. (4) Fertilization of *Ascaris*. *J. R. Micr. Soc.* 1888, p. 136.

Abstract of paper in *Arch. mikr. Anat.* 1888.

——. (5) Ergebnisse einer Untersuchung über die Befruchtungsvorgänge bei *Ascaris megalcephala*. *Math. naturw. Mitt. and SB. Ak. Berl.* 1888, p. 1.

KUNSTLER, J. Sur de nouveaux vers remarquables. *C.R.* 1888, i, p. 553. Abstract in *J. R. Micr. Soc.* 1888, p. 428.

Note on a new Cestode and a Planarian (unnamed) found in *Solen vagina*; and on a new *Echinobothrium* from the foot of the same animal.

LAMEERE, A. Sur des Œufs anormaux de l'*Ascaris megalcephala*. *Bull. Ac. Belg.* xv, p. 980.

In two of the Worms the eggs did not assume the usual rounded form. They became pear-shaped, and, though most of them were unfertilised, exhibited at the narrow end a preparation for the entrance of the spermatozoon.

LEE, A. BOLLES. (1) La Spermatogénèse chez les Chétognathes. *Cellule*, iv, p. 107. Abstract in *J. R. Micr. Soc.* 1888, p. 227.

——. (2) La Spermatogénèse chez les Némertiens apropos d'une théorie de Sabatier. *Rec. Z. Suisse*, iv, p. 409.

Controverts Sabatier's views.

LEIDY, JOS. (1) *Chaetopterus* from Florida. *P. Ac. Philad.* 1888, p. 73.

Note on the external anatomy of *C. pergamentaceus* (Cuvier), from the mouth of the Manatu river.

——. (2) *Entozoa* of the Terrapin. *P. Ac. Philad.* 1888, p. 127.

Echinorhynchus hamulatus, *Cucullanus microcephalus*, *Amphisternum grande* in the intestine; and *Polystomum oblongum* in the bladder; and

four specimens of *Polystomum coronatum*, n. sp., in throat and nose of the edible Terrapin.

[LEIDY, JOS.]. (3) Parasites of the Pickerel. *T. c.* p. 169.

Tenia leptosoma, n. sp., found in *Esox reticulatus*.

— (4) Parasites of the Rock Fish. *T. c.* p. 166.

Distomum galactosomum, n. sp., found on the gills of *Labrax lineatus*.

Also in the intestine of the same fish many specimens of *Echinorhynchus proteus*.

— (5) Reputed Tape-worm in a Cucumber. *T. c.* p. 81.

Smaller than, but resembling, *T. crassicolis* of the Cat: certainly merely accidentally associated with the cucumber.

— (6) Trematodes of the Musk-rat. *T. c.* p. 126.

Distomum echinatum and *Amphistomum subtriquetrum*, with a description of the *Distomum*.

VON LINSTOW, O. (1) Report on the *Entozoa* collected by H.M.S. 'Challenger,' during the years 1873-76. Challenger Report, xxiii, 1888.

Nematoda: 1 new genus, 8 new species. *Cestoda*: 3 new *Tænia*s and 2 *Tetrabothria*. Two plates, several woodcuts.

— (2) Helminthologisches. Arch. f. Nat. 1888, p. 235.

Notes, anatomical and histological, on various *Vermes*, with *Physaloptera præputialis*, n. sp., from *Felis catus*; *Trichocephalus campanula*, n. sp., from *F. catus domesticus*, in Brazil; *Echinorhynchus dipsadis*, n. sp.; *Cercaria terricola*, n. sp.; *C. terrestris*, n. sp.

LUTZ, A. (1) Nachtrag zu meiner letzten Mittheilung über die Invasion von *Tenia elliptica* und *Ascaris*. CB. Bakt. Parasit, iii, p. 299.

— (2) Klinisches über Parasiten des Menschen u. der Hausthiere *T. c.*

Notes from medical practice in Brazil. *Ascaris*, sp., pp. 553 & 618; *Oxyuris vermicularis*, pp. 681, 713, & 745; *Rhabdonema*, p. 746; *Dochmius ankylostoma*, p. 747.

— (3) Klinisches über Parasiten des Menschen u. der Hausthiere. *T. c.*

Trichocephalus dispar, p. 777; *Tænia*, p. 778.

— (4) Zur Frage der Uebertragung des menschlichen Spulwurmes. *T. c.* p. 425.

— (5) Weiteres zur Frage der Uebertragung des menschlichen Spulwurmes. *T. c.* p. 263.

Experiments on development of egg of *Ascaris*.

— (6) Zur Frage der Uebertragung von *Tenia elliptica*. *T. c.* p. 487.
Reply to Leuckhart.

MARENZELLER, E. v. Bericht über die Fortschritte auf dem Gebiete der Systematik, Biologie u. geogr. Verbr. der Plathelminthen (Cestoiden u. Trematoden), Chætognathen, Gephyreen, Annulaten, Entero-pneusten u. Rotatorien in 1885-87. Zool. Jahrb. iii, p. 1015.

MÉGNIN, P. Développement et Propagation de l'*Ascaris mystax*, chez les tout jeunes Chiens. C.R. Soc. Biol. v, p. 655.

An account of the direct development of this Worm in young Dogs. The eggs are obtained from the straw on which the litter lies, or from the abdomen of the mother, and the complete development takes place within the puppies.

MEYER, E. Studien ueber den Körperbau der Anneliden. MT. z. Stat. Neap. viii, p. 462. Abstract in J. R. Micr. Soc. 1888, p. 222.

Deals with the external form, larval and adult nephridia, gill-plates, parapodia, setæ, ventral glands, tentacles, mouth, nervous system, and circulatory system of the *Serpulaceæ* and *Hermellidæ*, and with the morphological conclusions drawn from the anatomical facts. 200 pp., 3 pls.

MICHEL, A. De l'existence d'un véritable épiderme cellulaire chez les Nématodes et spécialement les Gordiens. C.R. 1888, ii, p. 1175.

There is a cellular epidermis with a thick cuticle.

MICHAELSEN, W. Die Oligochæten von Süd-Georgien. JB. Hamb. v, p. 55.

Description, with figures, of 4 new species: *Pachydrilus maximus*, n. sp., *P. georgianus*, n. sp., *Enchytræus monochætus*, n. sp., *Acanthodrilus georgianus*, n. sp.

MONIEZ, R. (1) Note sur le *Lumbricus* (*Photodrilus*) *phosphoreus*, Dugès. Rev. Biol. i, p. 197.

Several individuals found near Montpellier; probably indigenous.

— (2) Sur le *Tenia nana* parasite de l'homme et sur son Cysticerque supposé (*Cysticercus tenebrionis*). C.R. 1888, i, p. 369.

A criticism of Grassi's identification of *T. nana* with *T. murina*.

MONTICELLI, F. S. (1) Contribuzioni allo studio della fauna elmintologica del golfo di Napoli. I. Ricerche sullo *Scolex polymorphus*, Rud. MT. z. Stat. Neap. viii, p. 85.

An elaborate anatomical and histological memoir.

— (2) Intorno allo *Scolex polymorphus*, Rud. Nota preliminare. Boll. Soc. Nat. Napoli, ii, p. 13.

Scolex polymorphus is larva of *Calliobothrium filicollæ*, not a larva common to genus *Calliobothrium*.

OEHLERT, D. P. Descriptions de quelques espèces Dévonienues du département de la Mayenne. Bull. Soc. Angers, xvii, p. 109.

With descriptions of 2 new species: *Cornulites armoricanus*, n. sp., and *Spirorbis intermedia*, n. sp.

- PAGENSTECHE, A. Würmer. *Vermes*. (Bronn's Klassen u. Ordnungen 4 Bd.) Leipzig: C. F. Winter, 1888, 8vo, Lief. 5/6 (pp. 145-208, 1 Bl. Erkl).
- PACHINGER, A. (1) A *Bothriocephalus latus* ideiglcues gazdáirol. Termes. Közlöny, 1888, p. 184; Pót-füzetek (supplement).
- (2) Negyedik közlemény békáink parazitaihoz s újabb adatok a Trematodák Bouez-és ébettanához. Orvos-termesz. Ertesitő. 1888, p. 1.
- A memoir, anatomical and histological, on some Trematodes: *Diatoma clarigerum*, *D. cylindraceum*, &c.
- PARONA, COVO. Appunti storici di Elmintologia italiana a contributo della corologia elmintologica umana. Milano: 1888, 8vo. (Extr. dalla Gazz. Med. Ital. Lomb., 21 pp.)
- POUCHET, M. Remarque sur la Dissémination des espèces d'eau douce. C.R. Soc. Biol. v, p. 311.
- The wind transports Rotifers, Nematodes, &c., in a state of desiccation.
- REPIACHOFF, W. Noch eine an Nebalien lebende Turbellarie. Zool. Anz. 1888, p. 141.
- ROSA, C. Lombrichi dello Scioa. Ann. Mus. Genov. Ser. 2a vi or xxvi, p. 571.
- Teledrilus*, n. g. *T. rajazzii*, n. sp., and *Acanthodrilus scioanus*, n. sp., both figured.
- ROSA, D. (1) Sulla struttura dell' *Hormogaster Redii* mihi. Riassunto. Boll. Mus. Zool. Anat. Comp. Torino, iii, No. 35.
- (2) Viaggio di Leonardo Fea in Birmania e Regioni vicine. v. Perichetidi. Ann. Mus. Genov. 1888, p. 155.
- Description, with figures, of *Perionyx excavatus*, *Megascolex armatus*, *Pericheta fea*, n. sp., and *P. birmanica*, n. sp.
- (3) Nuova Classificazione dei terricoli (Lumbricidi sensu lato). Boll. Mus. Zool. Anat. Comp. Torino, iii, No. 41.
- ROSA, H. Di un nuovo Lombrico italiano: *Allobophora tellinii*, n. sp. Op. cit. No. 44.
- ROULE, L. (1) Sur la formation des feuilletts blastodermiques et du coelome chez un Oligochète limicole (*Enchytraeoides marioni*, n. sp.). C R. 1888, i, p. 1811. Abstract in J. R. Micr. Soc. 1888, p. 735.
- (2) Observations sur la genèse et l'évolution des Feuilletts Blastodermiques chez les Annélides. Rev. Biol. i, p. 1.
- In *Enchytraeoides*, a planula with outer epiblast cells and inner mesendoblast cells is formed. A cavity appears in the centre, and round it the hypoblast splits off. In the mesoblast, now left between the two layers, a schizocoële appears.

[ROULE, L.] (3) Sur la structure histologique d'un Oligochète marin appartenant à un genre nouveau. C.R. 1888, i, p. 303. Abstract in J. R. Micr. Soc. 1888, p. 222.

Pachydrilus enchytræoides, Saint-Loup, is placed in a new genus *Enchytræoides*, because of its simple circulatory system and lobate testes.

ROUSSEL, A. L'anémie des mineurs et l'ankylostome duodénal. Rev. Sci. (rev. rose) xli, p. 635.

ROUSSELET, C. On various Rotifers. Sci. Goss. Aug. 1888, p. 172.

With a figure of ♀ *Asplanchna myrmeleo*.

RYWOSCH, —. Die Geschlechtsverhältnisse des *Microstoma lineare*. SB. Ges. Dorp. viii, p. 439.

This *Microstomum* is in summer dioecious, in late summer hermaphrodite.

SAINT-JOSEPH, M. LE BARON. Les Annelides Polychètes des Côtes de Dinard. Part II. Ann. Sci. Nat. 1888, v, p. 141.

Continuation and conclusion of monograph. 1 new genus, *Labrorostratus*, allied to *Lumbriconereis*, and 23 new species of the following genera and subgenera:—*Drilonereis* (1), *Eteone* (1), *Eulalia* (8), *Euphrosyne* (1), *Harmothoe* (4), *Labrorostratus* (1), *Leptonereis* (1), *Lumbriconereis* (2), *Mystides* (1), *Paractius* (1), *Phyllodoce* (2).

SALENSKY, M. (1) Development of Annelids. Abstr., J. R. Micr. Soc. 1888, p. 218.

— (2) Zur homologie der Seitenorgane der Nemertinen. Biol. Centralbl. viii, p. 79.

The Sarasin brothers have suggested a homology between the organs of smell in *Lopadorhynchus* and other Annelids, and the so-called cerebral tubes in the embryos of *Helix waltonii*. Salensky would extend the homology to the cerebral fissures of Nemertines.

SCHMIDT, F. Development of Generative Organs of *Cestoda*. J. R. Micr. Soc. 1888, p. 426.

Abstract of paper in Z. wiss. Zool. xlv.

SCHIMKEWITSCH, WLADIMIR. Sur le *Balanoglossus mereschowskii* (Wagner). Arch. Z. expér. 1888, 2, p. xxiii; Zool. Anz. 1888, p. 281.

Only one collar-pore (the left) present. The notochord of Bateson is an undifferentiated preoral part of the alimentary canal. It is compared to a slightly altered Trochosphere.

SEIFERT, O. *Ankylostomum duodenale*. J. R. Micr. Soc. 1888, p. 739.

Abstract of paper in Verh. Ges. Würzb. 1888.

SONSINO, P. Notices Helminthologiques. Arch. Ital. Biol. x, p. 190.

1. Sur le Cycle vital d'un Nématode hématozoaire du Chien (*Filaria immitis*). 2. *Rictularia plagiostruma* et espèces semblables.

- SOULIER, A. Sur la formation du tube chez quelques Annélides tubicoles. C.R. 1888, i, p. 505.

In *Myricola* and *Branchiomma* the mucous for the tube is not secreted by the tubiparous glands of Claparède, but by glands scattered irregularly over the surface of the body.

- SPENCER, W. B. (1) The Nephridia of Earthworms. Nature, xxxviii, p. 197.

A preliminary account of his results from anatomy of *Megascolides*.

- (2) The Anatomy of *Megascolides australis* (the Giant Earthworm of Gippsland). Tr. R. Soc. Vict. i, pt. 1.

A full account of the natural history and anatomy, with many plates, and a discussion of the relations of the nephridia in *Hirudinea*, *Chaetopoda*, and *Platyhelminthes*.

- STOKES, A. C. Observations sur les *Chaetonotus* et les *Dasydyles*. J. Microgr. xii, pp. 19 & 49.

On *Chaetonotus enormis*, n. sp., *C. acanthophorus*, n. sp., and *C. formosus*, n. sp. On genus *Dasydyles* and *D. saltitans*, n. sp.

- STOLC, A. Monografie Českých Tubificidů. Abh. böhm. Ges. (7) ii.

An anatomical and systematic memoir on the *Tubificidae*, with plates. *Lophocherla*, n. g., with *L. ignota*, n. sp. *Bothrioneuron*, n. g., with *B. vejdoskyanum*, n. sp.

- STOSSICH, M. (1) Brani di Elmintologia tergestina. Series iv. Boll. Soc. Adr. x, p. 90.

With many figures of Trematoda.

- (2) Brani di Elmintologia tergestina. Series v. T. c. p. 185.

Trematoda, *Nematoda*, &c., figures.

- STRUBELL, A. Structure and development of *Heterodera schuchtii*. J. R. Micr. Soc. 1888, p. 737.

Abstracted from Leuckart & Chun's Bibliotheca Zoologica, ii, 1888.

- TUCKERMANN, F. (1) An interesting specimen of *Tenia saginata*. Zool. Anz. 1888, p. 94.

7½ inches in length, 1061 joints.

- (2) Supplementary note on *Tenia saginata*. T. c. p. 472.

A larger Worm from the same patient; several of the proglottides peculiarly sculptured and wrinkled.

- VEJDOSKÝ, FR. Note sur le *Pachydrilus subterraneus*, n. sp. Rev. Biol. i, p. 121.

- VILLOT, A. Encore un mot sur le développement et la détermination spécifique des Gordiens adultes. Zool. Anz. 1888, p. 70.

Reply to Camerano's claim of priority. Abstract in J. R. Micr. Soc. 1888, p. 228.

VIRCHOW, R. On *Bilharzia hematobia*. Brit. Med. J. 1888, i, p. 1030.

Common in Egypt, but can be expelled, even from urinary organs, by treatment.

VOELTZKOW, A. (1) *Aspidogaster conchicola*. Arb. Inst. Würzb. viii, p. 249. Abstract in J. R. Micr. Soc. 1888, p. 954.

— (2) *Aspidogaster limacoides*. Arb. Inst. Würzb. viii, p. 290.

Short anatomical description.

VUILLEMIN, P. Sur un procédé pour étudier le système vasculaire de la sangsue. Bull. Soc. Nancy, viii, fasc. 20.

WALSINGHAM, LORD. The Gape-Worm of Fowls (*Syngamus trachealis*). Nature, xxxviii, p. 324.

An account of a paper in the Bulletin of Buffalo Soc. of Nat. Sciences, v, 2, in which it is shown that *Lumbricus terrestris* is the intermediate host.

WEBER, E. F. Notes sur quelques Rotateurs des environs de Genève. Arch. Biol. 1888, p. 647.

Contains an account of *Floscularia campanulata*, ♂, *Hydatina senta*, ♂, *Diglena catellina*, ♂, and *Brachionus urceolaris*, ♂. Several new species, and a short discussion of various anatomical points in the Rotifera.

WELDON, W. F. R. *Haplodiscus piger*, a new Pelagic Organism from the Bahamas. Q. J. Micr. Sci. xxix, p. 1.

Resembles *Leptodiscus medusoides* of R. Hertwig. Probably a free-living Cestode.

WELTNER, —. Die Planarien bei Berlin. S.B. nat. Fr. 1888, pp. 73 & 171.

WENDT, A. Ueber den Bau von *Gunda ulvæ* (*Planaria ulvæ*, Oersted). Arch. f. Nat. 1888, p. 253.

An anatomical and histological memoir.

WESTERN, GEO. Rotifera at Staines. Sci. Goss., Nov. 1888.

With a figure of ♂ *Asplanchna myrmeleo*.

WHITMAN, C. O. Preparation of the Eggs of *Ascaris megalocephala*. Am. Nat. 1888, p. 277.

A summary of the methods employed.

WILLOT, —. Sur l'*Heterodera schachtii*. C.R. 1888, ii, p. 507.

Claims priority over Strubell in the question of destroying *Heterodera* by a solution of sea-salt.

WIRÉN, A. Om circulations och digestions organen hos Annelider af familjerna *Ampharetidae*, *Terebellidae*, och *Amphictenidae*. Sv. Ak. Handl. xxi, No. 7.

ZACHARIAS, O. (1) Die Befruchtung des thierischen Eies. Tag. Deut. Nat. Vers. 1887, p. 249.

— Criticises Van Beneden's account of impregnation in *Ascaris megalocephala*.

— (2) Land Planarien auf Pilzen. Biol. Centralbl. viii, p. 542.
Geodesmus (Fusciola) terrestris found on *Agaricus deliciosus*.

— (3) Ueber die Verbreitung der Turbellarien in Hochseen. Zool. Anz. 1888, p. 704.

14 Turbellarians found in a lake 1168 mètres above the sea-level.

ZELLER, E. Generative Apparatus of *Diplozoon paradoxum*. J. R. Micr. Soc. 1888, p. 427.

Abstract of paper in Z. wiss. Zool. xlv.

ZSCHOKKE, F. (1) Ein Beitrag zur Kenntniss der Vögeltæmien. CB. Bakt. Parasit. iii, pp. 2 & 41.

Description of *Tænia argentina*, n. sp., from *Rhea americana*.

— (2) Ein weiteres Zwischenwirth des *Bothriocephalus latus*. Op. cit. iv, p. 417.

Trutta lacustris is an intermediate host.

III.—REFERENCES. SYSTEMATIC CLASSIFICATION.

GASTEROTRICA.

Chetonotus: *C. enormis*, n. sp, with pl., *C. acanthophorus*, n. sp., with pl., *C. formosus*, n. sp.; STOKES.

Dasydytes and *D. saltans*, n. sp., STOKES.

ENTEROPNEUSTA.

Literature for 1885–87; MARENZELLER.

Balanoglossus merechowskii, SCHIMKEWITSCH.

CHÆTOPODA.

Literature for 1885–87; MARENZELLER.

Development; SALENSKY (1).

Eyes compared with Arthropod simple eyes; KENNEL (2).

Discussion of excretory organs; BERGH (1).

Germinal layers; ROULE (1, 2).

Nephridia; SPENCER (2).

Pericardial glands; GROBBEN.

1888. [VOL. XXV.]

Æolosoma headleyi, n. sp., with pl. and description; BEDDARD (1).
Æolosoma leidyi, n. sp., CRAGIN.
Æolosoma stokesii, n. sp., CRAGIN.
Allolobophora tellinii, n. sp., H. ROSA.
Allurus in England; BENHAM (1).
Brachydrilus, n. g., *id.* (2).
Criodrilus: development of the excretory organs; presence of ;
visional excretory organs; BERGH (1, 2).
Criodrilus lacuum, Hoffm., anatomy; COLLIN.
Deinodrilus annectens, n. g. & sp., BEDDARD (5).
Dero-intermedius, n. sp., CRAGIN.
Dichogaster, n. g.: anatomy; excretory organs in earthworms genera
with a theory of their evolution; BEDDARD (10).
Diplocardius communis, n. g. & sp., with figs.; GARMAN.
Enchytraeus monochaetus, n. sp., MICHAELSEN.
Enchytraeoides marioni, n. g., = *Pachydrilus enchytraeoides*, Saint-Lon
nervous and excretory systems; ROULE (3).
Eudrilus: genitalia; BEDDARD (3).
Hormogaster; D. ROSA (1).
Lumbricidae: new classification; *id.* (3).
Lumbricus: nervous system; FRIEDLÄNDER (1).
Lumbricus: progression; *id.* (2).
Lumbricus (*Photodrilus*) *phosphoreus*, Dugès; MONIEZ (1).
Lumbricus terrestris: genital glands and nephridia; GOEHLICH.
Lumbricus: attacked by larva of *Steropus madidus*; HUGHES.
Lumbricus: experiments on excretion; KÜKENTHAL.
Lumbricidae; KULAGIN.
Megaloscolex armatus; D. ROSA (2).
Megascolides: nephridia; SPENCER (1, 2).
Megascolides australis: anatomy, with many figs.; *id.* (2).
Nephridia in Earthworms, their origin, &c.; BEDDARD (4).
Pachydrilus georgianus, n. sp., MICHAELSEN.
Pachydrilus maximus, n. sp., *id.*

- Teleudrilus*, n. g., *T. ragazzii*, n. sp., with figures; C. ROSA.
Typhoeus gammii, n. sp., BEDDARD (5).
Tubificidæ: anatomy and systematic, with *Lophochæta*, n. g., *L. ignota*, n. sp., and *Bothrioneuron*, n. g., with *B. vejdoskjanum*, n. sp.; STOLC.
Urochæta: mucous gland; BEDDARD (8): Integument and nephridia: *id.* (10).
Vetrovermis, n. g., and *V. hyalinus*, n. sp.; IMHOF.

POLYCHÆTA.

- Amage tumida*, n. sp., with figs.; EHLERS.
Ammocharidæ: *Owenia filiformis*; CUNNINGHAM.
Ampharetidæ: *Ampharete gracilis*, with figs.: genus *Melinna*, *M. cristata*; CUNNINGHAM.
Ampharetidæ: WIRÉN.
Amphicleis nasata, n. sp., with figs.; EHLERS. *A. procera*, n. sp., with figs.; *id.*
Amphictenidæ: *Pectinaria belgica* distinct from *P. auricoma*, with figs.; CUNNINGHAM.
Amphictenidæ; WIRÉN.
Amphinome pullasii, n. sp., with figs.; EHLERS.
Amphiro: *A. johnsoni*; SAINT-JOSEPH.
Aphrodite: *A. aculeata*; *id.* *A. acuminata*, n. sp., with figs.; EHLERS.
A. oblecta, n. sp., with figs.; *id.*
Aphroditaceæ: parasites of; commensal with other Polychætes; SAINT-JOSEPH.
Arabella: subgen. *Maclovina*, *M. gigantea*, with pl.; *id.*
Ariciidæ: characters of family, p. 642; *Scoloplos armiger*, with fig.;
Theodisca mammillata, with fig.; CUNNINGHAM.
Araucella debilis, n. sp., with figs.; EHLERS. *A. multidentata*, n. sp., with figs.; *id.*
Auchenoplax, n. g.: *A. crinita*, n. sp., with figs.; EHLERS.
Branchiomma: structure of eye; BRUNOTTI: formation of tube; SOULIER.
Branchiomma bioculatum, n. sp., with figs.; EHLERS. *B. intermedium*, n. sp., figs.; BEDDARD (2). *B. lobiferum*, n. sp., with figs.; EHLERS.
Branchiosyllis oculata, n. sp., with figs.; EHLERS.
Canephoridae subfamily: *Tserebellides stræmi*; CUNNINGHAM.
Capitellidæ: *Capitella fabricii*, *C. capitata*, with figs.; *Notomastus lateralis*, with figs.; *id.*
Chætopterus: nervous system; COSMOVICI.
Chætopterus pergamentaceus: external anatomy; LEIDY (1).
Chætopterus valencini: nervous system; JOYEUX-LIAFFUE.
Chloëia euglochis, n. sp., with figs.; EHLERS.
Chloëia merguiensis, n. sp., figs.; microscopy of the eyes; BEDDARD (2).
Chlorhæmidæ: *Trophonia plumosa*, genus *Flatelligeru*, *F. affinis*; CUNNINGHAM.
Cirratulidæ: characters of family, p. 643; *Cirratulus cirratus*, with figs., *C. tentaculatus*; *id.*

Cirratulidæ: genus *Chatozone*, *C. setosa*, with fig.; genus *Dodecaceria*, *D. concharum*, with fig.: *id.*

Clymene cingulata, n. sp., with figs.; EHLERS. *C. cirrata*, n. sp., with figs.; *id.*

Cornulites armoricanus, n. sp., with pl.; OEHLERT.

Dasybranchus lunulatus, n. sp., with figs.; EHLERS.

Dasychone conspersa, n. sp., with figs.; *id.*

Dasychone serratibranchis; BEDDARD (2).

Diopatra fragosa, n. sp., with figs.; EHLERS. *D. glutinatrix*, n. sp., with figs.; *id.* *D. pourtalesii*, n. sp., with figs.; *id.*

Drilonereis: *D. macrocephala*, n. sp., with pl., *D. filum*, with pl.; SAINT-JOSEPH.

Eriographidea: genus *Myxicola*, *M. steenstrupi*; CUNNINGHAM.

Eteone: *E. incisa*, n. sp., with pl., *E. foliosa*, with pl.; SAINT-JOSEPH.

Euarche, n. g.: *E. tubifex*, n. sp., with figs.; EHLERS.

Eulalia: *E. viridis*, with pl., *E. clapedii*, n. sp., with pl., *E. pusilla*, with pl., *E. splendens*, n. sp., with pl., *E. punctifera*, with pl., *E. ornata*, n. sp., with pl., *E. trilineata*, n. sp., with pl., *E. rubiginosa*, n. sp., *E. pallida*, *E. fuscescens*, n. sp., with pl., *E. venusta*, n. sp., with pl., *E. parva*, n. sp., with pl., *E. macroceros*, with pl., *E. limbata*. SAINT-JOSEPH.

Eumenia glabra, n. sp., with figs.; EHLERS.

Eunice articulata, n. sp., with figs.; *id.* *E. antellensis*, n. sp., with figs.; *id.* *E. conglomerans*, n. sp., with figs.; *id.* *E. floridana*, with figs.; *id.* *E. fucata*, n. sp., with figs.; *id.* *E. harasii*, with pl.; SAINT-JOSEPH. *E. rubra*, with figs.; EHLERS. *E. tibiana*, with figs.; *id.* *E. violacea-maculata*, n. sp., with figs.; *id.*

Euprosyne: *E. foliosa*, *E. intermedia*, n. sp., with pl.; SAINT-JOSEPH: *E. triloba*, n. sp., with figs.; EHLERS.

Eupompe indica, n. sp., figs.; BEDDARD (2).

Eurythoe alcyonia; *id. t. c.*

Filigrana huxleyi, n. sp., with figs.; EHLERS.

Glycera oxycephala, n. sp., with figs.; *id.*

Halosydna: *H. gelatinosa*, with pl.; SAINT-JOSEPH.

Harmothoe: *H. imbricata*, with pl., *H. impar*, *H. celiaca*, n. sp., with pl., *H. maxillospinosa*, n. sp., with pl.; *id.*

Harmathoe: *H. macleoidi*, with pl., *H. areolata*, with pl., *H. spinifera*, *H. picta*, n. sp., with pl., *H. arenicolæ*, n. sp., with pl., *H. reticulata*, with pl.; *id.*

Hermadion: *H. pellucidum*, with pl.; *id.*

Hermellidæ: relations to other Annelids, with a genealogical tree; MEYER.

Hermellidæ: structure, &c.; *id. t. c.*

Hermellidæ: characters of family, p. 632; *Sabellaria spinulosa*, with figs.; *Anmotrypane aulogastra*, with fig.; *Ophelia limacina*; CUNNINGHAM.

Hermellidæ: *Eumenia crassa*, with fig.; *Lipobranchius*, n. g., *L. jeffreysii* (*Eumenia jeffreysii* of McIntosh): *id.*

Hermione: *H. hystrix*; SAINT-JOSEPH.

Hesionæ protecta, n. sp., with figs.; EHLERS. *H. vittigera*, n. sp., with figs.; *id.*

- Hyalinæcia* : *H. grubi*, with pl. ; SAINT-JOSEPH.
Hyalopomatus langerhausi, n. sp., with figs. ; EHLERS.
Hypsicomus circumspiciens, n. sp., with figs. ; *id.*
Kefersteinia : *K. cirrata*, with pl. ; SAINT-JOSEPH.
Labrorostratus, n. g., *L. parasiticus*, n. sp., with pl. ; *id.*
Lacydonia : *L. miranda* ; *id.*
Lectmatonice kinbergi, n. sp., with figs. ; EHLERS.
Lagisca : *L. extenuata*, with pl. ; SAINT-JOSEPH.
Lepidonotus : *L. squamatus*, *L. pleiolepis*, with pl. ; *id.*
Lopadorhynchus ; G. C. BOURNE.
Lumbriconereis : *L. trugens*, with pl., *L. labrosumbriata*, n. sp., with pl., *L. paraloza*, n. sp., with pl. ; SAINT-JOSEPH. *L. bidens*, n. sp., with figs. ; *L. robusta*, n. sp., with figs. ; *L. floridana*, n. sp., with figs. ; EHLERS.
Lysidice : *L. ninetta*, with pl. ; SAINT-JOSEPH. *L. notata*, n. sp., with figs. ; EHLERS.
Magalia : *M. perarmata*, with pl. ; SAINT-JOSEPH.
Magelonidae : characters of family, p. 642 ; genus *Magelona*, *M. papillicornis*, with fig. ; CUNNINGHAM.
Maldanidae : genus *Nicomache*, *N. lumbricalis* ; genus *Axiothia*, *A. catenata* ; *id.*
Maldane cuculligera, n. sp., with figs. ; EHLERS.
Marphysa : *M. sanguinea*, with pl., *M. bellii*, *M. fallax* ; SAINT-JOSEPH. *M. bellii*, with figs. ; EHLERS.
Melinna parumdentata, n. sp., with figs. ; EHLERS.
Micronereis : *M. variegata* ; SAINT-JOSEPH.
Mystides : *M. bidentata*, with pl., *M. limbata*, n. sp., with pl. ; *id.*
Myxicola : formation of tube ; SOULIER.
Nematonereis : *N. unicornis* ; SAINT-JOSEPH.
Neptychus inermis, n. sp., with figs. ; *N. squamosa*, n. sp., with figs. ; *N. phyllocirra*, n. sp., with figs. ; EHLERS.
Nereis articulata, n. sp., with figs. ; *N. versipedata*, n. sp., with figs. ; *id.*
Nereis : subgen. *Leptonereis*, *L. raillanti*, n. sp. ; subgen. *Leontis*, *L. dumerilii* ; subgen. *Lipephile*, *L. cultrifera*, with pl., *L. floridana*, with pl. ; subgen. *Praxitheia*, *P. irrorata*, with pl. : SAINT-JOSEPH.
Subgen. *Nereis sensu str.*, *N. procera*, with pl. ; *id.*
Nichomachella picta, n. sp., with figs. ; EHLERS.
Nicidion brevis, n. sp., with figs. ; *id.*
Ninoe kinbergi, n. sp., with figs. ; *id.*
Notophyllium : *N. alatum*, with pl. ; SAINT-JOSEPH.
Notopygos crinita, with figs. ; EHLERS.
Oenone diphyllidia, with figs. ; *id.*
Onuphis gracilis, n. sp., with figs. ; *id.*
Ophiodromus : *O. flexuosus* ; SAINT-JOSEPH.
Ophryotrocha : *O. puerilis*, with pl. ; *id.*
Oxydromus : *O. propinquus* ; *id.*
Paramarphysa, n. g. : *P. longula*, n. sp., with figs. : EHLERS.
Pectinaria pellucida, n. sp., with figs. ; *id.*

Pholoë: *P. synophthalmica*, var. *Dinardensis*; SAINT-JOSEPH.

Phyllococe: *P. laminosa*, with pl., *P. maculata*, with pl., *P. splendens*, n. sp., with pl., *P. macrophthalmata*, with pl., *P. rubiginosa*, n. sp., with pl.; *id.* *P. oculata*, n. sp., with figs.; EHLERS. *P. phyllocirra*, n. sp., with figs.; *id.*

Paractius: *P. mutabilis*, n. sp.; SAINT-JOSEPH.

Placostegus incomptus, n. sp., with figs.; EHLERS.

Polycirrinæ subfam.: *Ereutho smitti*; CUNNINGHAM.

Polynoë: *P. scolopendrina*, var. *brevipalpa*; SAINT-JOSEPH.

Polynoë granulata, n. sp., with figs.; EHLERS. *P. lactea*, n. sp., with figs.; *id.* *P. polytricha*, with figs.; *id.* *P. tenuata*, n. sp., with figs.; *id.*

Pomatostegus stellatus, with figs.; *id.*

Pontogenia sericoma, n. sp., with figs.; *id.*

Potamis, n. g.: *P. spathiferus*, n. sp., with figs.; *id.*

Protis, n. g.: *P. simplex*, n. sp., with figs.; *id.*

Protula antennata, n. sp., with figs.; *id.*

Rhamphobrachium, n. g.: *R. agassizii*, n. sp., with figs.; *id.*

Rhodine sima, n. sp., with figs.; *id.*

Sabellidæ: characters of family, p. 668; genus *Sabella*, *S. paronia*, with figs., *Laonome krøyeri*; genus *Chone*, *C. infundibuliformis*; genus *Amphicora*, *A. fabricia*; CUNNINGHAM.

Serpulacæ: structure, development, &c.; MEYER.

Serpulidæ: relations to other Annelids: *id. t. c.*

Serpulidæ: *Serpula vermicularis*; genus *Filigrana*, *F. implexa*; genus *Pomatocerus*, *P. triquetra*, with fig.; *Spirorbis borealis*, *S. lucidus*; CUNNINGHAM.

Sigalion pourtalesii, n. sp., with figs.; EHLERS.

Spionidæ: characters of family, p. 655; genus *Nerine*, *N. coniocephala*, with fig., *N. cirratulus*; genus *Scolecopsis*, *S. vulgaris*; genus *Spio*, *S. seticornis*; genus *Leucodore*, *L. ciliata*; CUNNINGHAM.

Spirorbis intermedia, n. sp., with pl.; OEHLERT.

Staurocephalus: *S. rubrorittatus*, with pl., *S. ciliatus*, with pl., *S. pallidus*, with pl.; SAINT-JOSEPH.

Sthenelais: *S. idunæ*, with pl.; *id.* *S. simplex*, n. sp., with figs.; EHLERS.

Striation of muscles; FOL.

Stylarioides collarifer, n. sp., with figs.; *id.* *S. scutiger*, n. sp., with figs.; *id.*

Terebellidæ: genus *Thelepus*, *T. circinnata*; CUNNINGHAM.

Terebellidæ: *Amphitrite johnstoni*, with figs., *A. cerrata*, with figs.; *Terebella danielsseni*, with fig.; genus *Lanice*, *L. conchilega*, with fig.; *Scione maculata*; *id.*

Thelethusidæ: characters of family, p. 648; genus *Arenicola*, *A. marina*, with figs.; *id.*

Terebellidæ; WIRÉN.

Terebella brunneo-comata, n. sp., with figs.; EHLERS. *T. cetrata*, n. sp., with figs.; *id.* *T. reticulata*, n. sp., with figs.; *id.* *T. turgidula*, n. sp., with figs.; *id.*

Trypanosyllis vittigera, n. sp., with figs.; *id.*

Vermilia annulata, with figs.; *id.*

ARCHIANNELIDA.

Gordius fœa, n. sp., CAMERANO (2).

Gordiidae: anatomy, &c.; *id.* (1, 3).

Protoannelidae: relations to other *Vermes*; CAMERANO (3).

GEPHYREA.

Literature for 1885-87; MARENZELLER.

HIRUDINEA.

Outer form, rings, somites, &c., with a genealogical tree of the Leeches; APÁTHY (1).

Nephridia; SPENCER (2).

Vascular system: A. G. BOURNE.

Calliobdella and *C. nigra*, n. sp.; APÁTHY (2).

Clepsinidae subfamily: genus *Clepsina*, *C. marginata*, p. 789, *C. tenulata*, p. 789, *C. bioculata*, p. 790, *C. heteroclita* and *C. heteroclita striata*, n. var., *C. concolor*, n. sp., *C. sezoculata*, p. 791; *id.* (3).

Gnathobdellidae; *id.* (2).

Gnathobdellidae family: *Nepheleidae* subfamily; genus *Nepheleis*, *N. octoculata*, p. 793; *id.* (3).

Hirudinidae subfamily: genus *Aulastoma*, *A. gulo*, p. 793; genus *Hirudo*, *H. medicinalis*, p. 794; *id.* (3).

Pontobdella; *id.* (2).

Rhynchobdellidae family: *Ichthyobdellidae* subfamily; genus *Piscicola*, *P. geometra*, p. 776, *P. piscium*, p. 776, *P. linearis*, p. 779, *P. stellata*, p. 779, *P. respirans*, p. 779; *id.* (2).

ROTIFERA.

Literature for 1885-87; MARENZELLER.

Habitat, anatomy, &c.; WEBER.

Anurea brevispinus: description, with figs.; *id.*

Asplanchnidae: characters of genera and species described, with *Asplanchna imhofi*, n. sp., *A. herricki*, n. sp., *A. krameri*, n. sp., *A. girodi*, n. sp., *Asplanchnopus*, n. g.; GUERNE.

Asplanchna myrmeleo, ♀; ROUSSELET.

Asplanchna myrmeleo, ♂; WESTERN.

Brachionus urceolaris, ♀ & ♂, description, with figs., and excretory organs; WEBER.

Brachionus amphyeros, description; *id.*

Diglena catellina, ♀ & ♂, description, with figs., nervous system, excretory system, &c ; *id.*

Ertemias tetrathrix ; HOOD.

Floscularia campanulata, ♀ & ♂, with figs. ; WEBER.

Hydatina senta, ♀ & ♂, general anatomy, with figs. ; *id.*

Limnias annulatus, *L. granulatus*, n. sp., with figs. ; *id.*

Microcodon clavus : general anatomy, with figs. ; *id.*

Oeistes socialis, n. sp., with figs. ; *id.*

Rotifer trisecatus, n. sp., general anatomy, with figs. ; *id.*

Rotifer elongatus, n. sp., general anatomy, with figs. ; *id.*

NEMERTEA.

Homology of cerebral fissures ; SALENSKY (2).

Lateral organs ; DEVOLITZKY.

Nervous system of various forms ; BÜRGER.

Spermatogenesis ; LEE (2).

Parasitic Nemertines ; BRAUN (1).

TREMATODA.

Anatomy ; BIEHRINGER.

Amphistomum grande, in the Terrapin ; LEIDY (2).

Amphistomum subtriquetrum, in the Musk Rat ; *id.* (6).

Aspidogaster conchicola : anatomy and development ; VOELTZKOW (1).

Aspidogaster limacoides : description ; *id.* (2).

Bilharzia and *Epicystitis* ; FENWICK.

Bilharzia hæmatobia ; VIRCHOW.

Bilharzia in Sicily ; GRASSI & REVELLI (1).

Cercaria terrestris, n. sp., from liver of *Helix lens* ; VON LINSTOW (2).

Cercaria terricola, n. sp., from liver of *Helix vermiculata* ; *id.* t. c.

Distomum acanthocephalum, with fig. ; STOSSICH.

Distomum bacillare, with fig. ; *id.*

Distomum benedonii, with fig. ; *id.*

Distomum clariforme, n. sp., with figs. ; BRANDES (1).

Distomum clarigerum : anatomy and histology, with pls. ; PACHINGER.

Distomum echinatum, in the Musk-rat ; LEIDY (6).

Distomum galactosomum, n. sp., with description ; *id.* (4).

Distomum turgidum, n. sp., with figs. ; BRANDES (1).

Distomum pedicellatum, with fig. ; STOSSICH (2).

Gasterostomum minimum, with fig. ; STOSSICH (2).

Heterakis inflata, with fig. ; *id.* t. c.

Heterakis vesicularis, with fig. ; *id.* t. c.

Holostomum : orientation ; BRANDES (2).

Polystomum oblongum and *P. coronatum*, n. sp., in the Terrapin ; LEIDY.

CESTODA.

- A new Cestode and an *Echinobothrium* from *Solen vagina*; KUNSTLER.
Bothriocephalus latus and *Trutta lacustris*; ZSCHOKKE (2).
Bothriocephalus rugosus, Rud.: habitat and general anatomy; VON LINSTOW (1).
Cysticercus cellulose in the brain; BOLLINGER.
Cysticercus of *Tænia solium*; BLANC (4).
Calliobothrium filicollis, larva of; MONTICELLI (2).
Haplodiscus piger, n. g. & sp.; WELDON.
Scolex polymorphus: list of synonyms, anatomy and histology, relations to *Calliobothrium*; MONTICELLI (2).
Tænia; LUTZ (3).
Tænia argentina, n. sp., ZSCHOKKE (1).
Tænia claculus, n. sp. (figs.); VON LINSTOW (1).
Tænia cucumerina in Man; BRANDT.
Tænia cucumerina; GRASSI (1, 2).
Tænia diomedæ, n. sp.; VON LINSTOW (1).
Tænia echinococcus and Hydatids in brain; *Tænia solium* and Hydatids in brain: LEADER.
Tænia elliptica; LUTZ (1).
Tænia elliptica; *id.* (6).
Tænia elliptica; GRASSI & CALANDRUCCIO (1).
Tænia elliptica: development; GRASSI & ROVELLI (2).
Tænia flavopunctata, *T. leptocéphala*, and *T. diminuta*, all synonyms; GRASSI (4).
Tænia increescens, n. sp. (figs.); VON LINSTOW (1).
Tænia leptosoma, n. sp., with description; LEIDY (3).
Tænia nana; MONIEZ (2).
Tænia proglottidina; *Bothriocephalus latus*; GRASSI & ROVELLI (3).
The perforations in *Tænia saginata* and *Bothriocephalus latus*; BLANC (2).
Tænia saginata; TUCKERMAN (1, 2).
Tænia saginata, perforations in; DANYSZ.
Tænia trichoglossi, n. sp. (P) (figr.); VON LINSTOW (1).
Tetrabothrium auriculatum, n. sp. (figs.); *id. t. c.*
Tetrabothrium torulosum, n. sp. (figs.); *id. t. c.*

TURBELLARIA.

- At high altitudes; ZACHARIAS (3).
Relations to other groups; REPIACHOFF.
Planarian from the intestine of *Solen vagina*; KUNSTLER.
Dendrocela: *Planaria alpina*, *P. aurita*, n. sp., *P. fissipara*, n. sp.; KENNEL (1).

CHÆTOGNATHA.

Literature for 1885-87; MARENZELLER.

Sagitta: spermatogenesis; LEE (1).

Chaetognatha: striation of muscles; FOL.

NEMATODA.

A new classification of Nematodes suggested; BOS (1).

Agamonema engraulidis, with figs.; STOSSICH (2).

Agamonema mulli, with figs.; *id. t. c.*

Ankylostoma and miners' anemia; ROUSSEL.

Ankylostoma; BLANCHARD (1, 2).

Ascaris; LUTZ (2).

Ascaris biloba, n. sp. (figs.); VON LINSTOW (1).

Ascaris diomedææ, n. sp. (figs.); *id. t. c.*

Ascaris lumbricoides; BLANCHARD (1).

Ascaris macruri, n. sp. (figs.); VON LINSTOW (1).

Ascaris macruridei, n. sp. (woodcut); *id. t. c.*

Ascaris marginata: development; GRASSI (1).

Ascaris megalocéphala: abnormal eggs; LAMEERE: polar globule
VAN GEHUCHTEN: impregnation and maturation of ovum; ZACHAR
(1), KULTSCHITZKY (1-4).

Ascaris mystax in cats; F. BLANCHARD.

Ascaris mystax: direct development within young dogs; MÉGNIN

Ascaris simplex (figs.); VON LINSTOW (1).

Ascaris spiculigera (figs.); *id. t. c.*

Cuculanus microcephalus in the Terrapin; LEIDY (2).

Dochmius; LUTZ (2).

Eustrongylus gigas: colouring matter; ADUCCO.

- Hematozoon*, Lewis ; GRASSI.
Heterodera schachtii, integument ; CHATIN (3).
Leraneocephalus annulatus, with figs. ; STOSSICH (2).
Leptodera terricola in the onion ; CHATIN (1 2, 4).
Oryuris causing epileptiform seizures ; FERGUSON.
Oryuris ; LEITZ (2) : excretory system ; BLAND (1).
Pelodera strongyloides and *Leptodera terricola*, probably *terricolous*, but associated with *Tylenchus* in onion bulbs ; CHATIN (1, 2).
Pelodera strongyloides in the onion ; *id.* (1, 2, 5).
Physaloptera præputialis, n. sp., ♀ & ♂ ; VON LINSTOW (2).
Prothelmis profundissima, n. g. & sp., figs. ; *id.* (1).
Pseudalius minor : characters of the genus and general anatomy, with figs. ; *id.* t. c.
Rhabdonema ; LUTZ (2).
Rictu'aria cristata and *R. plagiotoma* : habitat, &c. ; SONSINO.
Spiroptera sanguinolenta ; GRASSI (1).
Syngamus trachealis : *Lumbricus* its host ; WALSHINGHAM.
Trichecephalus ; BLANCHARD (1), LUTZ (2). *T. campanula*, n. sp., VON LINSTOW (2).
Tylenchus and plant diseases ; BOS (1). *T. devastatrix*, *id.* t. c. *T. putrifaciens*, *id.* (2, 5).

ACANTHOCEPHALA.

- Echinorhynchus* : *E. dipsadis*, n. sp., larva only ; VON LINSTOW (2) :
E. gigas, GRASSI & CALANDRUCCIO : *E. globulosus*, ♀ genitalia ;
 KNÜPFER : *E. heruca*, ♀ genitalia ; *id.* : *E. hamulatus* in the Terrapin ;
 LEIDY (2) : *E. moniliformis* and *E.* n. sp. ? ; GRASSI & CALANDRUCCIO (2) :
E. polymorphus, ♀ genitalia ; KNÜPFER : *E. proteus* in *Labrax lineatus* ;
 LEIDY (4) : *E. pseudosegmentatus*, n. sp., with figs., general anatomy, and
 ♀ genitalia ; KNÜPFER : *E. strumosus*, ♀ genitalia ; *id.*

IV.—LIST OF REFERENCES. SUBJECT-MATTER CLASSIFICATION.

GENERAL ANATOMY, DESCRIPTIONS, &c.

- Acanthodrilus* ; C. ROSA : *A. annectens*, BEDDARD ; *A. beddardi*, HORST (1). Annelids : organs of protection and locomotion ; MEYER, p. 601, & *id.* (2). *Arenicola marina* ; CUNNINGHAM. *Acmotoma* ; REPIACHOFF. *Eolosoma* ; BEDDARD (1). *Aspidogaster conchicola* ; VOELTZKOW (1) : *A. limacoides* ; *id.* (2). *Balanoglossus mereschkowskii* ; SCHIMKEWITSCH. *Brachydrilus* ; BENHAM (2). *Cestoda* ; KUNSTLER (1). *Chatopterus pergamentaceus* ; LEIDY (1). *Criodrilus lucium* ; COLLIN. *Deinodrilus benhami* ; BEDDARD (5). *Dichogaster damonis*, n. g. ; *id.* (10). *Diplocardia communis* ; GARMAN. *Distomum* : *D. claviforme*, BRANDES

(1); *D. galactosomum*, LEIDY (4); *D. turgidum*, BRANDES (1). *Hermellidæ*: Parapodia, cirrhi, tentacles, gill-plates; MEYER, p. 483. *Hirudinea*: external characters, with figs. and diagrams; APÁTHY (1). *Hypodiscus piger*, n. g.; WELDON. *Oligochæta*: MICHAELSEN, BEDDARD (9). *Pachydrilus subterraneus*; VEJDOVSKÝ. *Perichætida*; D. ROSA (2). *Physaloptera præputialis*; VON LINSTOW (2). *Planaria*: *P. alpina*, *P. aurita*, and *P. fissipara*; KENNEL (1). *Polychæta*; BEDDARD (2). *Polychæta sedendaria*; CUNNINGHAM. *Prorhynchus applanatus*; KENNEL (1). *Pseudalius minor*; VON LINSTOW (1). *Rictuluria plagiosoma*; SONSINO. *Rhinodrilus*; HORST (2). *Rotifera*: rotatory organs; WEBER. *Scolex polymorphus*; MONTICELLI (1, 2). *Serpulaceæ*; MEYER. *Stenostoma bicaudatum*; KENNEL (1). *Tenia*: *T. flavopunctata*, GRAFSI (4); *T. leptosoma*, LEIDY (3). *Teleudrilus*; ROSA (1). *Trematoda*; STOSSICH (1, 2). *Trichocephalus*; VON LINSTOW (2). *Turbellaria*; KUNSTLER (1, 2). *Typhæus gammii*; BEDDARD (5). *Vetrovermis*; IMHOFF.

SPECIAL ANATOMY, &c.

ALIMENTARY CANAL.

Amphuretidæ; WIRÉN. *Amphictenidæ*; *id.* *Aspidogaster conchicola*; VOELTZKOW (1). *Asplanchnidæ*; GUERNE. *Oriodrilus lacuum*; COLLIN. *Diplocardia communis*; GARMAN. *Gunda ulvæ*; WENDT. *Megascolides*; SPENCER (2). *Terebellidæ*; WIRÉN. *Tylenchus devastatrix*; BOS (1).

EXCRETORY ORGANS.

Acanthodrilus multiporus; BEDDARD (5). *Æolosoma*; *id.* (1). *Annelids*: phylogeny of nephridia; MEYER (1), SPENCER (2). *Arenicola marina*; CUNNINGHAM. *Aspidogaster*; VOELTZKOW (1). *Oriodrilus lacuum*; COLLIN. *Deinodrilus*; BEDDARD (5). *Dichogaster*; *id. t. c.* *Diplocardia communis*; GARMAN. *Earthworms*; BEDDARD (4, 10), SPENCER (1, 2). *Experiments on Earthworms*; KÜKENTHAL. *Enchytraoides marioni*; ROULE (3). *Gunda ulvæ*; WENDT. *Hermellidæ*: MEYER, (1) p. 463. *Lumbricus*; GOENLICH. *Megascolides*; BEDDARD (4), SPENCER (2). *Oligochæta*; MICHAELSEN. *Oryuris*; BLANC (1). *Perichæta*; BEDDARD (4). *Pectinaria belgica*; CUNNINGHAM. *Polychæta sedendaria*; *id.* *Rotifera*; WEBER. *Scolex polymorphus*; MONTICELLI (1). *Serpulaceæ*; MEYER, p. 463, with pls. *Tenia argenti*; ZSCHOKKE (1). *Tubificidæ*; STOLC. *Tylenchus devastatrix*; BOS (1). *Urochæta*; BEDDARD (10).

GLANDS.

Annelids: ventral glands; MEYER, p. 509: peritoneal glands and lymph cells; *id. t. c.* p. 579. *Chetopoda*: pericardial glands; GROBBEN.

Oligochæta: prostatic glands; BEDDARD (5). *Perichæta*: capsulogenous and salivary glands; *id.* (6). *Urochæta*: mucous gland; *id.* (8).

GENERATIVE ORGANS.

Acanthocephala; KNÜPFER. *Aspidogaster*; VOELTZKOW (1). *Bothriocephalus rugosus*; VON LINSTOW (1). *Cirratulus cirratus*; CUNNINGHAM, p. 646. *Criodrilus lacuum*; COLLIN. *Dichogaster*; BEDDARD (10). *Diplocardia*; GARMAN. *Echinorhynchus pseudosegmentatus*; KNÜPFER. *Eudrilus*; BEDDARD (3). *Gunda*; WENDT. *Lumbricus*; GOEHLICH. *Megascolides*; SPENCER (2). *Microstomum lineare*; RYWOSCH. *Oligochæta*: prostatic glands; BEDDARD (5). *Oligochæta*; MICHAELSEN. *Perichætidæ*; ROSA (2). *Phreoryctes*; BEDDARD (7). *Polychæta sedentaria*; CUNNINGHAM. *Tenia argentina*: spicules; ZSCHOKKE (1). *Tubificidæ*, with pls.; STOLC. *Tylenchus devastatrix*; BOS (1). *Urochæta*: ovaries and ducts; BEDDARD (10).

INTEGUMENT AND MUSCULAR SYSTEM.

Annelids: striated muscle; FOL. *Branchiomma*: formation of tube; SOULIER. *Chetognatha*: striated muscle; FOL. *Oriodrilus*; COLLIN. *Diplocardia*; GARMAN. *Gordius*; MICHEL. *Gordius feæ*: cuticle, with woodcut; CAMERANO (2). *Gunda*; WENDT. *Heterodera schachtii*; CHATIN (3). *Megascolides*; SPENCER (2). *Myricola*: formation of tube; SOULIER. *Scolex polymorphus*: muscles and suckers; MONTICELLI (1). *Tenia argentina*; ZSCHOKKE (1). *Tubificidæ*; STOLC. *Tylenchus*; BOS (1). *Urochæta*: non-vascularity of integument; BEDDARD (10).

NERVOUS SYSTEM.

Aspidogaster: VOELTZKOW (1). *Chaetopterus*; COSMOVICI, JOYEUX-LAFFUE. *Criodrilus*; COLLIN. *Diplocardia*; GARMAN. *Enchytraeoides*; ROULÉ (3). *Gunda*; WENDT. *Hermellidæ*; MEYER, p. 537. *Lumbricus*; FRIEDLÄNDER (1). *Lumbricus*: experiments on its relation to progression; *id.* (2). *Megascolides*; SPENCER (2). Nemertines; BÜRGER. *Oligochæta*: brain, with pls.; MICHAELSEN. *Rotifera*: *Scolex polymorphus*; MONTICELLI (1). *Serpulacæ*; MEYER, p. 537. *Tenia argentina*; ZSCHOKKE (1). *Tubificidæ*; STOLC.

SENSE ORGANS.

Annelida: eyes; KENNEL (2). *Aspidogaster*; VOELTZKOW (1). *Branchiomma*: eye; BRUNOTTI. *Chloëia*: eyes; BEDDARD (2). *Nemertea*: cerebral clefts; SALENSKY (2).

VASCULAR SYSTEM.

Ampharetidæ; WIRÉN. *Amphictenidæ*; *id.* *Cirratulus*; CUNNINGHAM, p. 645. *Criodrilus*; COLLIN. *Diplocardiu*; GARMAN. *Hermellidæ*; MEYER, p. 569. *Hirudinea*; A. G. BOURNE. Leech: method of investigation; VUILLEMIN. *Megascolides*; SPENCER (2). *Serpulaceæ*; MEYER, p. 569. *Terebellidæ*; WIRÉN. *Trophoniu plumosa*; CUNNINGHAM. *Tubificidæ*; STOLÇ.

HISTOLOGY.

[See under "Integument," "Nervous System," "Sense Organs."]

Ampharetidæ and *Amphictenidæ*: digestive canal; WIRÉN. *Diplocardia*; GARMAN. *Terebellidæ*: digestive canal; WIRÉN. *Trematoda*; PACHINGER (2).

EMBRYOLOGY.

Annelida; SALENSKY (1). *Annelida*: germinal layers; ROULE (2). *Arenicola*: eggs and larvæ; CUNNINGHAM. *Ascaris*; GRASSI (1, 2, 3), LUTZ (4, 5): method for eggs; WHITMAN: polar bodies; CARNOY: *A. marginata*; GRASSI (1, 2): maturation and impregnation of the ovum; KULTSCHITZKY (2): *A. megalcephala*, abnormal eggs and micropyle; LAMEERE: impregnation of the ovum; ZACHARIAS (1): maturation and fertilization of the ovum; formation of polar bodies; meaning of impregnation; KULTSCHITZKY (1, 3, 4, 5): polar globules; VAN GEHUCHTEN: *A. mystax*, development, with woodcuts of early stages; MÉGNIN. *Aspidogaster conchicola*; VOELTZKOW (1). *Bothriocephalus latus*; GRASSI & ROVELLI (3). *Cercaria terricola*, *C. terrestris*; VON LINSTOW (2). *Criodrilus*: excretory organs; BERGH (1, 2). *Cysticercus* in human eye; BLANC (4). *Echinorhynchus dipsadis*: larva; VON LINSTOW (2). *Enchytræoides marioni*: germinal layers and coelome; ROULE (1, 2). *Filaria immitis*; GRASSI (1, 2), SONSINO. *Hematozoon*; LEWIS, GRASSI (1, 2). *Haplodiscus piger*; WELDON. *Hermellidæ*: larval nephridia, gills, cirri, nervous system, &c.; MEYER. *Lopadorhynchus*: larval organs, origin and nature of mesoblast; G. C. BOURNE. Nemertines: spermatogenesis; LEE (2). Planarians: asexual reproduction; KENNEL (1). *Scolex polymorphus*; MONTICELLI (2). *Sagitta*: spermatogenesis; LEE (1). *Serpulaceæ*: larval nephridia, mouth, gills, cirrhi, nervous system; MEYER. *Spiroptera sanguinolenta*; GRASSI (1, 2). *Syngamus*; WALSHINGHAM. *Tenia*, *T. cucumerina*; GRASSI (1, 2): *T. elliptica*; GRASSI & CALANDRUCCIO (1), GRASSI & ROVELLI (3): *T. nana*; MONIEZ (2): *T. proglottidina*; GRASSI & ROVELLI (3). *Terebellidæ*: larvæ; CUNNINGHAM. *Tylenchus devastatrix*: segmentation of ovum, formation of the layers; BOS (1).

GEOGRAPHICAL DISTRIBUTION, FAUNAL LISTS, &c.

Allurus; BENHAM (1). Annelids; BEDDARD (2). *Annulata*; MARENZELLER. *Asplanchnidæ*; GUERNE. *Bihharzia*; GRASSI & ROVELLI (1).

- Chaetognatha*; GRASSI & CALANDRUCCIO (2). *Oriodrilus*; COLLIN.
Earthworms; GARMAN. *Enteropneusta*; MARENZELLER. *Gephyreu*;
id. Gunda; WENDT. *Lumbricide*; KULAGIN. *Photodrilus phosphoreus*;
MONIEZ (1). Nematodes: transportation by wind; POUCHET. *Peri-*
chaetide; ROSA (2). Planarians; KENNEL, WELTNER. *Platyhelminthes*;
MARENZELLER. *Polycheta*; SAINT-JOSEPH, CUNNINGHAM. *Rotifera*;
WEBER, MARENZELLER, POUCHET. *Tænia echinococcus*; LEADER.
Turbellaria; ZACHARIAS (2, 3). *Vermes*; CRAGIN, HEAPE.



—



CŒLEENTERATA.

BY

WILLIAM E. HOYLE, M.A., F.R.S.E.

LIST OF PUBLICATIONS.

- A. E. V. Poisonous Jelly-Fish. *Science*, xi, p. 146. [Nothing new.]
- AGASSIZ, A. Three Cruises of the *Blake*. *Bull. Mus. C. Z.* xiv, xv, pp. xxii, 314, 220, 545 figs., & maps; also separately with title,—A Contribution to American Thalassography. Three Cruises of the United States Coast and Geodetic Survey Steamer "*Blake*" in the Gulf of Mexico, in the Caribbean Sea, and along the Atlantic Coast of the United States, from 1877 to 1880. Boston, New York, and London: 1888, 8vo.
- ALLMAN, G. J. Report on the *Hydroida* dredged by H.M.S. *Challenger* during the Years 1873-76. Part II.—The *Tubularinæ*, *Corymorphinæ*, *Campanularinæ*, *Sertularinæ*, and *Thalamophora*. Scientific Results of the Voyage of H.M.S. *Challenger* during the years 1873-76, vol. XXIII, part lxx, lxix & 90 pp., 39 pls., & map. London, Edinburgh, & Dublin: 1888, 4to; abstr., *Am. Nat.* xxii, p. 840.
- BALE, W. M. On some New and Rare *Hydroida* in the Australian Museum Collection. *P. Linn. Soc. N.S.W.* (2) iii, pp. 745-749, pls. xii-xxi; abstr., *J. R. Micr. Soc.* 1889, pp. 71 & 72.
- BEDOT, M. Sur l'*Agalma clausi*, n. sp. *Rec. Z. Suisse*, v, pp. 73-91, pla. iii & iv; abstr., *J. R. Micr. Soc.* 1889, pp. 393 & 394.
- BELL, A. British Upper Tertiary Corals. *Geol. Mag.* (3) v, pp. 28 & 29.
- BELL, F. J. (1) Description of *Xiphigorgia ridleyi*. *Ann. N. H.* (6) ii, pp. 176 & 177, cuts.
- . (2) Note on the Large Size of Spicules of *Acis orientalis*. *J. R. Micr. Soc.* 1888, pp. 921 & 922.
- . (3) Exhibition of, and remarks upon, a specimen of *Cerianthus membranaceus* in its tube. *P. Z. S.* 1888, p. 359.
1888. [VOL. XXV.]

- BÉRANECK, E. Étude sur les corpuscles marginaux des Actinies. Bull. Soc. Neuchatel, xvi, pp. 3-41, pl. i.
- BERGH, R. S. Bemærkninger om Udviklingen af *Lucernaria*. Vid. Medd. 1888, pp. 214-220, 7 cuts.
- BERNARD, F. Le *Polyparium ambulans* (coelentéré nouveau). Le Nat. x, pp. 56-58 & 74-76, 8 cuts.
- BÉTENCOURT, A. Les Hydraires du Pas-de-Calais. Bull. Sci. Fr. Belg. i, pp. 201-214.
- BLOCHMANN, F., & HILGER, C. Ueber *Gonactinia prolifera*, Sara, eine durch Quertheilung sich vermehrende Actinie. Morph. JB. xiii, pp. 385-401, pls. xiv & xv; abstr., J. R. Micr. Soc. 1888, pp. 593 & 594.
- BOURNE, G. C. (1) Coral Formations. Nature, xxxvii, pp. 414 & 415, xxxviii, p. 5.
- . (2) The Atoll of Diego Garcia and the Coral Formations of the Indian Ocean. P. R. Soc. xliii, pp. 440-461, pl. iv; abstr., Nature, xxxvii, pp. 546-550.
- BROOKS, W. K. (1) On a New Method of Multiplication in Hydroids. J. Hopk. Univ. Circ. vii, pp. 29 & 30; abstr., J. R. Micr. Soc. 1888, pp. 433 & 434; Am. Nat. xxii, p. 355.
- . (2) The Life History of *Epenthesis McCradyi* (n. sp.). Stud. Biol. Lab. J. Hopkins Univ. iv, pp. 147-162, pls. xiii-xv; abstr., J. R. Micr. Soc. 1888, p. 743; Nature, xxxviii, p. 356.
- *——. (3) The Growth of Jelly-Fish. Pop. Sci. Monthly, Sept. and Oct. 1888. [Abstract.]
- BURMEISTER, G. Noticias sobre las *Hydromedusæ* Argentinae. An. Soc. Arg. xxi, 1886, pp. 5 & 6.
- *CANAVARI, M. Idrozoi fossili di monte Tiriolo in Calabria, e dell' isola di Capri. Atti. Soc. Tosc. P.-v. vi, pp. 197 & 198.
- CHUN, C. (1) Die pelagische Thierwelt in grösseren Meerestiefen und Beziehungen zu der Oberflächenfauna. Bibl. Zool. Heft. i, 66 pp., 5 pls.; abstr., J. R. Micr. Soc. 1888, pp. 558 & 559.
- . (2) Bericht über eine nach den Canarischen Inseln im Winter 1887-88 ausgeführte Reise. SB. Ak. Berlin, 1888, pp. 1141-1173; trans., Ann. N. H. (6) iii, pp. 214-246.
- †COLASANTI, J. Das blaue Pigment der Hydromedusen. Unters. Nat. xiii, 6, pp. 471 *et seq.*; abstr., CB. Physiol. ii, pp. 10 & 11.
- COX, C. F. Notes on the Thread-cells of certain Coelenterate Animals. J. N. Y. Micr. Soc. iv, pp. 131-139, pl. xii.
- *DADAY, J. E. v. Adatok a Balaton, &c. [Contributions to the Knowledge of the Fauna of Lake Balaton. *Protozoa, Coelenterata, Vermes, Arthropoda.*] Budapest: 1887, 8vo, 5 pp.

- DAIRON, J. The Graptolites of the Moffat District. Tr. Dumfries Nat. Hist. Soc. 1886-87, pp. 52-57.
- DAMON, W. E. Living *Actinia*, or Sea-Anemones. J. N. Y. Micr. Soc. iv, pp. 171-173. [Popular.]
- DANIELSSEN, D. C. *Actinida* of the Norwegian North-Atlantic Expedition. Bergens Mus. Aarsber. 1887, pp. 1-24, pls. i-iii; abstr., J. R. Micr. Soc. 1889, pp. 230 & 231.
- DARWIN, C. Sulla struttura e distribuzione dei banchi di corallo e delle isole madreporiche. Transl. by G. & R. Canestrini. Turin: 1888, 8vo, 210 pp., 3 pls.
- DE AMICIS, G. A. Ellipsactinie nei dintorni di Salerno. Atti. Soc. Tosc. P.-v. vi, p. 196.
- DRYER, C. R. Coral Formations. Nature, xxxviii, p. 6.
- DUBOIS, R. Sur le rôle de la symbiose chez certains animaux marins lumineux. C.R. cvii, pp. 502-504.
- DUNCAN, P. M. On *Glyphastræa searadiata*, Lonsdale, sp. Ann. N. H. (6) i, p. 160.
- DU PLESSIS, G. Faune des Hydraires littoraux gymnoblastes observés à Villefranche-sur-Mer. Rec. Z. Suisse, iv, pp. 525-544.
- DURÈGNE, —. (1) (*Adamsia palliata*, Bohadsch, du Golfe de Gascogne). Act. Soc. L. Bord. xl, C.R. p. xxviii, 1886.
- (2) (*Chitonactis richardi*, Marion, au large d'Arcachon.) *Ibid.*
- ETHERIDGE, R. Fossils of the British Islands, stratigraphically and zoologically arranged. Vol. I. Palæozoic. Oxford: 1888, 4to, viii & 468 pp. [Cœlenterata, pp. 4-25, 137-141, 206-219, 353, 354, 391-400, 428, 429, & 447.]
- EWART, J. C. Directions for the Examination of *Amœba*, *Paramœcium*, *Vorticella*, *Hydra*, *Lumbricus*, *Hirudo*, *Asterias*, and *Echinus*. Edinburgh: 1888, 4to.
- FAUCOT, L. Rapport à M. le ministre de l'instruction publique sur une mission dans la mer Rouge et dans le golfe d'Aden. Arch. Z. expér. (2) vi, pp. 117-134, 2 cuts.
- FEWKES, J. W. (1) Are there Deep-Sea *Medusæ*? Am. J. Sci. (3) xxxv, pp. 166-179; Ann. N. H. (7) i, pp. 247-260; abstr., J. R. Micr. Soc. 1888, p. 236.
- (2) On a New Physophore, *Plæophysa*, and its relationships to the Siphonophores. Ann. N. H. (6) i, pp. 317-322, pl. xvii; abstr., J. R. Micr. Soc. 1888, pp. 592 & 593.
- (3) Studies from the Newport Marine Laboratory. XIX.—On certain *Medusæ* from New England. Bull. Mus. O. Z. xiii, pp. 209-240, pls. i-vi; abstr., Am. Nat. xxii, p. 354; J. R. Micr. Soc. 1888, p. 592; Nature, xxxviii, p. 137.

- [FEWKES, J. W.] (4) A new Mode of Life among *Medusæ*. P. Boston Soc. xxiii, pp. 389-395; Ann. N. H. (6) i, pp. 362-368; Am. Micr. J. ix, pp. 207-209; abstr., J. R. Micr. Soc. 1888, pp. 591 & 592.
- (5) On the Origin of the Present Form of the Bermudæ. J. Boston Soc. xxiii, pp. 518-522.
- FISCHER, P. (1) Description d'une nouvelle espèce du genre *Edwardsia*, Quatrefages. Bull. Soc. Z. Fr. xiii, pp. 22 & 23.
- (2) Note sur des Scyphistomes de Méduse acraspède. T. c. pp. 96-99; abstr., J. R. Micr. Soc. 1888, p. 965.
- (3) *Actinie* of Coasts of France. J. R. Micr. Soc. 1888, p. 593. [Cf. Zool. Rec. xxiv, Cœl. p. 3.]
- FOERSTE, A. F. Sections of Fossils. Science, xi, p. 22.
- FORD, S. W. Notes on Certain Fossils discovered within the City Limits of Quebec. Tr. N. York Ac. Sci. vii, pp. 2-5.
- FOWLER, G. H. (1) On a new *Pennatula* from the Bahamas. P. Z. S. 1888, pp. 135-140, pl. vi, 3 cuts; abstr., J. R. Micr. Soc. 1888, p. 593.
- (2) Two New Types of *Actiniaria*. Q. J. Micr. Sci. xxix, pp. 143-152, pl. xv; abstr., J. R. Micr. Soc. 1889, pp. 70 & 71.
- (3) On some new types of Madreporarian Structure. Rep. Brit. Ass. 1887, pp. 759 & 760.
- *FRAIPONT, J. Sur les affinités des genres *Favosites*, *Emmonsia*, *Pleurodictyum*, et *Michelinia*, à l'occasion de la description d'une forme nouvelle de Favositide du calcaire carbonifère supérieur. Ann. Soc. géol. Belg. 1888, 15 pp., 1 pl.
- GIARD, A. (1) La Castration parasitaire. Nouvelles recherches. Bull. Sci. Fr. Belg. i, pp. 12-45. [Cœlenterata, p. 44.]
- (2) Fragments biologiques. IX. Le Gulf-Stream sur les côtes du Pas-de-Calais et de la mer du Nord. T. c. pp. 296 & 297.
- (3) *Op. cit.* XIV. Sur une Anthoméduse de la Manche, *Rathkea octopunctata*, Sars. T. c. pp. 317-319, pl. xxi.
- (4) Le Laboratoire de Wimereux en 1888. (Recherches fauniques.) T. c. pp. 492-513.
- *GIROD, P. Recherches sur la Chlorophylle des Animaux. La matière colorante de l'Hydre verte. Trav. Lab. Zool. Girod, i, 18 pp.
- GREENWOOD, [MISS] M. Digestion in *Hydra*. J. Physiol. ix, pp. 317-344, pls. vi & vii; abstr., J. R. Micr. Soc. 1889, pp. 395 & 396.
- GRIEG, J. A. (1) Undersøgelser over dyrelivet i de vestlandske fjorde. I. Moster. Bergens Mus. Aarsber. 1887, 13 pp. [Cœlenterata, pp. 12 & 13.]
- (2) To nye Cornularier fra den norske kyste. T. c. 18 pp., 2 pls.; abstr., J. R. Micr. Soc. 1889, p. 230.
- GUPPY, H. B. (1) Coral Formations. Nature, xxxvii, pp. 462 & 604.
- (2) A Criticism of the Theory of Subsidence as explaining the Origin of Coral Reefs. Scot. Geogr. Mag. iv, pp. 121-137, map.

- [GUPPY, H. B.] (3) Zur Bildung von Koralleninseln. Biol. Centralbl. viii, pp. 23-26. [Abstr.]
- HAACKE, W. (1) Zur Tektologie und Phylogenie des Korotneff'schen Anthozoengenus *Polyparium*. Biol. Centralbl. vii, pp. 685-690, 6 cuts, viii, p. 31; abstr., J. R. Micr. Soc. 1888, p. 594.
- (2) Zu Herrn R. von Lendenfeld's Besprechung meiner Arbeit über die Scyphomedusen des St. Vincent Golfes. T. c. pp. 357-359.
- HADDON, A. C. (1) Researches at the St. Andrews Marine Laboratory (under the Fishery Board for Scotland).—On Larval *Actiniae* parasitic on *Hydromedusae* at St. Andrews. Ann. N. H. (6) ii, pp. 256-259, 6 cuts; abstr., J. R. Micr. Soc. 1888, p. 965.
- (2) On two species of *Actiniae* from the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. J. Anderson. J. L. S. xxi, pp. 247-255, pls. xix & xx.
- HAECKEL, E. (1) Report on the *Siphonophorae* collected by H.M.S. Challenger during the years 1873-76. Scientific Results of the Voyage of H.M.S. Challenger during the years 1873-76, vol. xxviii, pt. lxxvii. London, Edinburgh, & Dublin: 1888, 4to, iii & 380 pp., 50 pls.
- (2) System der Siphonophoren auf phylogenetischer Grundlage entworfen. Jen. Z. Nat. xxii, pp. 1-46; also separately, Jena: 1888, 8vo; abstr., J. R. Micr. Soc. 1888, pp. 741-743. [Translated as introduction to (1).]
- HALL, J., & SIMPSON, G. B. Palaeontology of New York. vi. Corals and *Bryozoa*, containing descriptions and figures of species from the Lower Helderberg, Upper Helderberg, and Hamilton Groups. Albany: 1887, 4to, 298 pp., 6 pls.
- HEAPE, W. Preliminary Report upon the Fauna and Flora of Plymouth Sound. J. Mar. Biol. Ass. ii, pp. 153-193. [*Cœlenterata*, pp. 165-167.]
- *HEILPRIN, A. (1) The Animal Life on Our Sea-Shore. Philadelphia: 1888, 12mo.
- (2) Contributions to the Natural History of the Bermuda Islands. P. Ac. Philad. 1888, pp. 302-328, pls. xiv-xvi. [*Cœlenterata*, pp. 303-309]
- HERTWIG, R. Report on the *Actiniaria* dredged by H.M.S. Challenger during the years 1873-1876. Supplement. Reports on the Scientific Results of the Voyage of H.M.S. Challenger during the years 1873-76, vol. xxvi, pt. lxxiii. London, Edinburgh, & Dublin: 1888, 4to, 56 pp., 4 pls.
- HICKSON, S. J. (1) Theories of Coral Reefs and Atolls. An Address delivered before Section D. of the British Association, at Bath, 1888. Oxford: 1888, 8vo, 16 pp.
- (2) On the Sexual Cells and the early Stages in the Development of *Millepora plicata*. Phil. Trans. clxxix B, pp. 193-204, pls.; prelim. notice, P. R. Soc. xliii, pp. 245-247; abstr., J. R. Micr. Soc. 1888, pp. 964 & 965.

- HINDE, G. J. On the History and Characters of the Genus *Septastrea*, D'Orbigny (1849), and the Identity of its Type-Species with that of *Glyphastraea*, Duncan (1887). Q. J. Geol. Soc. xlv, pp. 200-227, pl. ix; abstr., Ann. N. H. (6) i, pp. 382 & 383; Geol. Mag. (3) v, pp. 137 & 138.
- HOYLE, W. E. Report on the Biological Investigations carried on into the Waters to the West of Lewis, in July and August, 1887. Rep. Fish. Scotl. vi, pt. iii, pp. 215-222, pl. xv.
- IRVINE, R. Coral Formations. Nature, xxxvii, pp. 461, 462, 509, 605, xxxviii, p. 54.
- ISHIKAWA, C. Ueber die Herkunft der weiblichen Geschlechtszellen bei *Podocoryne carnea*, Sars. Z. wiss. Zool. xlvii, pp. 621-625, 6 cuts; abstr., J. R. Micr. Soc. 1889, pp. 231 & 232.
- JAMES, J. F. Sections of Fossils. Science, xi, p. 50.
- JAMES, U. P. & J. F. On the Monticuliporoid Corals of the Cincinnati group, with a Critical Revision of the Species. J. Cincinn. Soc. x, pp. 158-184, xi, pp. 15-47.
- JUNGENSEN, H. F. E. (1) Om Bygningen og Udviklingen af Kolonien hos *Pennatula phosphorea*, L. Vid. Medd. 1888, pp. 154-181, pl. v.
- (2) Ueber Bau und Entwicklung der Kolonie von *Pennatula phosphorea*, L. Z. wiss. Zool. xlvii, pp. 626-649, pl. xxxix; abstr. J. R. Micr. Soc. 1889, pp. 229 & 230.
- KELLER, C. Die Wanderung der marinen Thierwelt im Suezcanal. Zool. Anz. xi, pp. 359-364 & 389-395.
- KEYES, C. R. On the Fauna of the Lower Coal Measures of Central Iowa. P. Ac. Philad. 1888, pp. 222-246, pl. xii. [Cœlenterata, p. 225.]
- KOBY, F. Monographie des Polypiers jurassiques de la Suisse. VIII. Mém. Soc. Pal. Suisse, xv, pp. 401-456, pls. cix-cxx.
- KOCH, G. V. Ueber *Flabellum*. Morph. JB. xiv, pp. 329-344, pl. xiii; abstr., J. R. Micr. Soc. 1888, pp. 963 & 964.
- KOROTNEV, A. (1) Contribution à l'étude des Hydraires. Arch. Z. expér. (2) vi, pp. 21-31, pls. i & ii; abstr., J. R. Micr. Soc. 1888, p. 963.
- (2) Opyet sravnitel'nago izucheniya. Cœlenterata; Ch. 2, *Myrio-thela*, eya stroenie, razvitie i myestvo v sistemye; Ch. 3, *Hydra fusca*, osobennosti gistologicheskago stroeniya i razvitiya. [Account of the Comparative Anatomy of the Cœlenterata, pts. 2 & 3; Pt. 2, *Myrio-thela*, its structure, development, and systematic position; Pt. 3, *Hydra fusca*, with especial reference to its histological structure and development.] Izvest. Mosc. Univ. xxxvii, No. 2, 63 pp., 5 pls., 1880.
- (3) *Cunocantha* und *Gastrodes*. Z. wiss. Zool. xlvii, pp. 650-657, pl. xl; abstr., J. R. Micr. Soc. 1889, pp. 232 & 233.

- KRUKENBERG, C. F. W.** (1) Neue Thatsachen für eine vergleichende Physiologie der Phosphorescenzerscheinung bei Thieren und bei Pflanzen. *Vergl. Physiol. Stud.* (2) iv, 1887, pp. 77-141; abstr., *CB. Physiol.* i, pp. 689-691. 1. Die physiologischen Eigenthümlichkeiten des Leuchtvermögens bei *Pteroides griseum*, L., pp. 83-105.
- (2) *Op. cit.* III. Das Leuchten des Rothen Meeres. *T. c.* pp. 101-147.
- (3) Die Durchfluthung des Isthmus von Suez in chorologischer Beziehung. Wissenschaftliche Ergebnisse meiner Reise vom Étang de Berre über Marseille und Triest nach Suakim und Massana. I. II. *Op. cit.* v, pp. 1-156, 2 pls.; also separately, Heidelberg: 1888, 8vo.
- LACAZE-DUTHIERS, H. DE.** (1) Observations relatives à une Note récente de M. Vignier "Sur une nouveau type d'Alcyonaire." *C.R.* cvii, p. 215.
- (2) Sur les avantages de l'emploi de la lumière électrique dans les observations de Zoologie marine. *T. c.* pp. 718-720.
- LENDENFELD, R. V.** (1) List of Errata in the Catalogue of the Australian *Scyphomedusæ* and *Hydromedusæ*. 7 pp., 1 pl.
- (2) Der Character der australischen Cölenteratenfauna. *Biol. Centralbl.* vii, pp. 641-646; abstr., *Am. Nat.* xxii, pp. 353-354.
- (3) Neue Arbeiten über australische Polypomedusen. *Op. cit.* viii, pp. 218-220. [Notice, with remarks, of HAACKE, cf. *Zool. Rec.* xxiv, *Cœl.* p. 4.]
- (4) Einige neuere Arbeiten über Madreporarien. *T. c.* pp. 274-276. [Abstr.]
- (5) Studer's Alcyonarien-System. *T. c.* pp. 312-314. [Abstr.]
- (6) G. von Koch, Die Gorgoniden des Golfes von Neapel und der angrenzenden Meeresabschnitte. *T. c.* pp. 314-319. [Abstr.]
- (7) Notes on Australian Cœlenterates. *Rep. Brit. Ass.* lvi, 1887, pp. 709 & 710.
- (8) Ueber Cœlenteraten der Südsee. VII. Die australischen rhizostomen Medusen. *Z. wiss. Zool.* xlvii, pp. 201-324, pls. xviii-xxvii; abstr., *J. R. Micr. Soc.* 1889, pp. 67-70.
- LEUCKART & NITSCHKE.** Zoologische Wandtafeln zum Gebrauche an Universitäten und Schulen. Pl. lxiv, *Aurelia aurita*. Kassel: 1888, pls., with 4to text.
- LISTER, J. J.** On Some Points in the Natural History of *Fungia*. *Q. J. Micr. Sci.* xxix, pp. 359-363, 2 cuts; abstr., *J. R. Micr. Soc.* 1889, p. 231.
- LLERENA, J.** Fisiografía y meteorología de los mares del globo (continuación). *An. Soc. Arg.* xxv, pp. 5-288, xxvi, pp. 133-280 (continuará).

- LO BIANCO, S. Notizie biologiche riguardanti specialmente il periodo di maturità sessuale degli animali del golfo di Napoli. *MT. e Stat. Neap.* viii, pp. 385-440. [*Cœlenterata*, pp. 386-393.]
- M'INTOSH, W. C. Notes from the St. Andrews Marine Laboratory (under the Fishery Board for Scotland).—No. ix. 1. On *Lessuria*, a Ctenophore new to Britain. 5. On the appearance and disappearance of *Lucernaria* and other *Forma*. *Ann. N. H.* (6) ii, pp. 464-466, 471, & 472, cut; abstr., *J. R. Micr. Soc.* 1889, p. 71.
- MACMUNN, C. A. Further Observations on some of the Applications of the Spectroscope in Biology, with special reference to the presence of Chlorophyll in Animals. *P. Birmingham. Phil. Soc.* v, 1887, pp. 177-218, pls ix & x.
- MALTZAN, H. v. *Gorgonia flabellum* mit *Ovula* als Beispiel von Anpassung an die Farbe der Umgebung. *SB. nat. Fr.* 1888, p. 53.
- MARENZELLER, E. v. Ueber einige japanische Turbinoliiden. *Ann. Hofmus. Wien*, iii, pp. 15-22; also separately, Vienna: 1888, 8vo.
- MARR, J. E., & NICHOLSON, H. A. The Stockdale Shales. *Q. J. Geol. Soc.* xliv, pp. 654-730, pl. xvi.
- MARSHALL, A. M., & FOWLER, G. H. Report on the *Pennatulida* dredged by H.M.S. "Porcupine." *Tr. R. Soc. Edinb.* xxxiii, pp. 453-464, pls. xxxi & xxxii; abstr., *J. R. Micr. Soc.* 1888, p. 745.
- MARSHALL, W. Die Tiefsee und ihr Leben. Leipzig: 1888, 8vo, 343 pp., 4 pls., 114 cuts.
- MEYER, G. Die Korallen des Doggers von Elsass-Lothringen. *Abh. geol. Spec.-Karte v. Els.-Lothr.* iv, 5, 44 pp., 6 pls.
- MITSIKURI, K. Turning *Hydra* inside out: a Correction. *Am. Nat.* xxi, p. 773.
- MORRIS, C. Theories of the Formation of Coral Islands. *P. Ac. Philad.* 1888, pp. 419 & 420.
- MURRAY, J. "Coral Formations." *Nature*, xxxvii, pp. 414 & 438.
- NICHOLSON, H. A. (1) On the Structure and affinities of the Genus *Parkeria*, Carp. *Ann. N. H.* (6) i, pp. 1-12, pl. iii, cut; abstr., *J. R. Micr. Soc.* 1888, p. 237.
- . (2) On certain anomalous Organisms which are concerned in the Formation of some of the Palæozoic Limestones. *Geol. Mag.* (3) v, pp. 15-24, 5 cuts.
- . (3) On the Detection of Mural Pores in thin Sections of the *Favositidae*. *T. c.* pp. 104-110, cut.
- . (4) On the Structure of *Cleistopora* (*Michelinia*) *geometrica*, Edwards & Haime, sp. *T. c.* pp. 150-152, cut.
- ORTMANN, A. Studien über Systematik und geographische Verbreitung der Steinkorallen. *Zool. JB.* iii, pp. 143-188, pl. vi.
- PATTISON, S. R. On the Pedigree of the Coral Reefs of England. *J. Tr. Vict. Inst.* xxi, pp. 196-210.

- PERGENS, E. Contributions à l'histoire des bryozoaires et des hydrozoaires recents. Bull. Soc. mal. Belg. xxii, pp. lxxxv-xc; also P.-v. Soc. mal. Belg. xvi, pp. cii-cvii.
- PERRIER, E. Le "*Polyparium ambulans*." La Nature, xvi, 2, pp. 5-7, 2 cuts. [Abstr. of KOROTNEV.]
- POČTA, P. Die Anthozoen der böhmischen Kreideformation. Abh. böhm. Ges. (7) ii, 60 pp., 2 pls.
- PROCHÁZKA, V. J. Studien an den mährischen Miocaenkorallen. SB. böhm. Ges. 1887, pp. 300-328, pls. i-iv.
- [QUELCH, J. J.] The Zoophytes. Timehri, n.s. ii, pp. 299-313. [Popular.]
- RATHBUN, R. (1) Catalogue of the species of Corals belonging to the Genus *Mudrepora* contained in the U. S. National Museum. P. U. S. Nat. Mus. x, 1887 (1888), pp. 10-19.
- (2) Annotated Catalogue of the species of *Porites* and *Synaræa* in the U. S. National Museum, with a description of a new species of *Porites*. T. c. pp. 354-366, pls. xv-xix.
- READE, T. M. Coral Formations. Nature, xxxvii, pp. 488 & 535.
- RIDLEY, S. O. Report on the Alcyoniid and Gorgoniid *Alcyonaria* of the Mergui Archipelago, collected for the Trustees of the Indian Museum, Calcutta, by Dr. J. Anderson. J. L. S. xxi, pp. 223-247, pls. xvii & xviii.
- ROSS, J. G. Coral Formations. Nature, xxxvii, p. 462, 584, & 585.
- SHARP, B. Ctenophores in Fresh Water. P. Ac. Philad. 1888, pp. 82 & 83; abstr., J. R. Micr. Soc. 1888, pp. 565 & 566.
- SLUITER, C. P. Ein merkwürdiger Fall von Mutualismus. Zool. Anz. xi, pp. 240-243; abstr., J. R. Micr. Soc. 1888, p. 557.
- *STUCKENBERG, A. (1) Koralli e Inshanke verkhnogo yarusa Sredne-russkogo Kammenougolnogo ezhestnyaka. [Corals and *Polyzoa* of the Upper Carboniferous Limestone of Middle Russia.] Protok. Kazan. Univ. (1886-87?), No. 92, 3 pp.
- (2) Anthozoen und Bryozoen des oberen Mittlerrussischen Kohlenkalks. Mém. Comité Géol. v, 54 pp., 4 pls. [Russian, with German abstract.]
- STUDER, T. (1) On some new Species of the Genus *Spongodes*, Less., from the Philippine Islands and the Japanese Seas. Ann. N. H. (6) i, pp. 69-72.
- (2) Sur la formation de l'axe chez une Cornularide; la *Telesto trichostemma*, Dana. Verh. Schweiz. Ges. 1888, p. 62.
- SUCHETET, A. L'hybridité dans la nature. Rev. Quest. Sci. xxiv, pp. 175-244. [Cœlenterata, p. 177.]
- THÉRY, A. Note sur une Physalie (*Physalia pelagica*) travée à Dunkerque. Bull. Sci. Nord. (2) x, pp. 423-427; see also Bull. Soc. Acclim. (4) iv, pp. 162 et seqq.; abstr., Rev. Tr. Sci. viii, p. 80.

- THOMSON, J. On a new Species of *Diphyphyllum*, and on a remarkable Form of the Genus *Lithostrotion*. Ann. N. H. (6) ii, pp. 317-323, 3 cuts.
- TIKHOMEROV, A. A. (1) O svoikh zanyatiyakh na Neapolitanskoi Zoologicheskoi Stantsii po istorii razvitiya Hydroidea i o prakticheskikh zanyatiyakh v Geidel'bergskoi laboratorii [Results of the Naples Station on the development of *Hydroidea*, and on the practical results of the Heidelberg Laboratory]. Izvestiya Imp. obs. Lyubet. Estest. Anthropol. i Etnograf. Moskva, 1, 1886, pp. 285-288.
- . (2) K istorii razvitiya gidroidov [On the development of the Hydroidea]. Invest. Mosc. Univ. 1 (2), 69 pp., 2 pls., 1887; see also Trudui St. Petersburg Nat., Zool. xix, Protok, p. 58.
- TIGHT, W. G. A Note on a Peculiar Habit of Fresh-water *Hydra*. Bull. Denison Univ. iv, p. 131.
- TOMES, R. F. On *Heterastræa*, a new Genus of *Madreporaria* from the Lower Lias. Geol. Mag. (3) v, pp. 207-218, pl. vii.
- TURNER, E. H. *Kerona polyparum*, parasite on *Hydra fusca*. Tr. Manch. Micr. Soc. 1887, pp. 34-36, pl. iii, figs. 2 & 3.
- USOV, M. M. *Polypodium hydriforme*, novaya forma pryemnovodnyekh tselenterat [*P. hydriforme*, a new form of fresh-water Cœlenterate]. Trudui Kazan Univ. xiv (6), 1885, 24 pp., 2 pls.
- VAGNER, N. P. O Gidroidach i Meduzach Byelago Morya [The *Hydroidea* and *Medusæ* of the White Sea]. Trudui St. Petersburg Nat. xi, 1880, Protok. pp. 194-201.
- VARIGNY, H. DE (1) Bemerkungen über den Gewichtsverlust durch Nahrungsmangel bei *Aurelia aurita*. CB. Physiol. i, 1887, pp. 389 & 390.
- . (2) Beitrag zum Studium des Einflusses des süßen Wassers auf die Seethiere. T. c. pp. 566-568.
- . (3) Notes sur l'action de l'eau douce, de la chaleur et de quelques poisons sur le *Beroë ovatus*. CR. Soc. Biol. (8) iv, 1887, pp. 61-63.
- VAYSSIÈRE, A. Atlas d'anatomie comparée des invertébrés. Fasc. 2 & 3. Paris: 1888, fol., 30 pls., with explanations. [Cœlenterata, pls. liv, lv, lvi, & lviii.]
- VIGUIER, C. (1) Études sur les animaux inférieurs de la baie d'Alger. Arch. Z. expér. (2) vi, pp. 351-373, pls. xix & xx; abstr., J. R. Micr. Soc. 1889, p. 393.
- . (2) Sur un nouveau type d'Anthozoaire, la *Fascicularia radicans*, C. Vig. C.R. cvii, pp. 186 & 187; transl., Ann. N. H. (6) ii, pp. 198 & 199; abstr., J. R. Micr. Soc. 1888, p. 745.
- VINE, G. R. Note on the Palæontology of the Wenlock Shales of Shropshire. P. Yorks. Geol. Polyt. Soc. ix, pp. 224-248.

- VOGT, C. (1) Des genres *Archnactis* et *Cerianthus*. Arch. Biol. viii, pp. 1-41, pls. i-iii ; abstr., J. R. Micr. Soc. 1888, pp. 743-745.
- † —. (2) Sur un nouveau genre de Médusaire sessile *Lipkea ruspoliana*, C. V. Mém. Inst. Génév. xvii, 53 pp., pls. x & xi.
- WALTHER, J. Die Korallenriffe der Sinaihalbinsel, geologische und biologische Beobachtungen. Abh. sächs. Ges. xiv, 10, pp. 439-506, 8 pls., map, 34 zincographs.
- WENTZEL, J. Ueber fossile Hydrocorallinen (*Stromatopora* et affin.) überhaupt, mit besonderer Berücksichtigung der in den Unter-Permschichten, Middle Productus-Limestone, der Salt-Range auftretenden Formen. Prague : 1888, 8vo, 26 pp., 4 pls.
- (2) Ueber fossile Hydrocorallinen (*Stromatopora* und ihre Verwandten) nebst einem Anhang. Lotos, ix, 1889, pp. 1-29, pls. i-iii [issued Nov., 1888].
- WHARTON, W. J. L. (1) Coral Formations. Nature, xxxvii, pp. 393-395, 3 maps.
- (2) Formations of Coral Reefs. Op. cit. xxxviii, pp. 568 & 569.
- WHITE, C. A. On *Hindeastræa*, a New Generic Form of Cretaceous *Astræida*. Geol. Mag. (3) v, pp. 362-364, cut.
- WILSON, E. B. Note on the Mechanism of the thread-cells in *Hydra*. Am. Micr. J. ix, pp. 79 & 80, pl.
- WILSON, H. V. (1) Abstract of Observations on the Development of *Manicina areolata*. J. Hopk. Univ. Circ. vii, pp. 31-33, 2 cuts ; abstr., J. R. Micr. Soc. 1888, pp. 434 & 435 ; Am. Nat. xxii, p. 355.
- (2) On the Development of *Manicina areolata*. J. Morph. ii, pp. 191-252, pls. xiv-xx ; abstr., J. R. Micr. Soc. 1889, p. 231 ; J. Hopk. Univ. Circ. viii, pp. 39 & 40.
- WILSON-BAKER, D. Coral Formations. Nature, xxxvii, pp. 604 & 505.

ANATOMY AND PHYSIOLOGY.

A full description is given of the anatomy of *Agalma clausi*, n. sp. The histology agrees in the main with that of *Halistemma*, as given by Korotnev ; among other features may be mentioned small red glands on the bracts, which expel a yellowish red colouring matter when the animal is captured. The tentacles have a terminal orifice ; BEDOT.

Detailed anatomy of *Fenja mirabilis* and *Ægir frigidus* ; DANIELSEN [cf. p. 32, *postea*].

Morphology of the *Siphonophora* ; HÆCKEL (1, 2) [*vide infrà*].

General account of *Myriothele* and *Hydra fusca* ; KOROTNEV (2).

The anatomy of *Lipkea*, VOGT [cf. Zool. Rec. xxiii, Cœl. p. 9], is described in full, with illustrations ; VOGT (2).

Anatomical descriptions of new species indicated below, especially the curious genus *Aulorchis*, and many others ; HERTWIG.

A general sketch of recent contributions to the morphology of the *Hydroida* is given by ALLMAN.

The comparative anatomy of the *Rhizostomata* is exhaustively treated ; two new species are described in detail, and the systematic position of the group is discussed ; LENDENFELD (8).

Flabellum michelini and *F. paroninum* are described anatomically, and some criticisms offered on the writings of Bourne & Fowler ; KOCH.

Madracis asperula forms a cœnenchymatous colony, with septa projecting above the general surface, and is morphologically intermediate between *Caryophyllia* and *Seriatopora* ; FOWLER (3).

Amphihelia ramea has a canal system between the body-wall and corallum ; in *Stephanophyllia formosissima* the body-wall is supported only by the costæ ; *id. t. c.*

In *Pennatula phosphorea* all the polyps of one leaf are arranged in the same direction ; the two dorsal septa only are ectodermal in origin, and gonads never develop on them ; JUNGENSEN.

The morphology of *Cunoctantha* and the new form *Gastrodes* is discussed ; the latter is the larval form of a *Cunina* ; KOROTNEV (3).

On the basis of an anatomical examination by means of thin sections, *Parkeria* is placed among *Hydrozoa*, intermediate between *Hydrocorallina* and the *Hydractiniidæ* ; NICHOLSON (1).

Presence of mural pores in *Favositidæ* maintained ; *id.* (3).

Thread-cells ; COX ; WILSON, E. B.

Large spicules of *Acis orientalis*, and possibility of the recognition of such as fossils ; BELL (2).

Formation of the axis of *Telesto trichostemma* ; STUDER (2).

Remarks on spectrum of pigments from *Anthea* ; MACMUNN.

Colouring matter of *Hydra viridis* ; GIROD.

Chemical characters of the pigment of *Hydromedusæ* ; COLASANTI.

In *Vellella* and *Porpita*, about twice a minute, the lower surface is strongly pressed against the air chambers so as to expel their contents. These forms are thus *Cœlenterata*, which breathe air by trachææ ; CHUN (2).

The process of ingestion in *Hydra*, and the minute anatomy of the digestive apparatus in different stages of the process ; GREENWOOD.

Haacke's observations on the *Medusæ* of the Gulf of St. Vincent [*cf.* Zool. Rec. xxiv, *Cœl.* p. 4] are criticised, LENDENFELD (3). Reply ; HAACKE (2).

Specimens of *Aurelia aurita* lost from two-thirds to three-fourths of their weight by starvation for 150 days ; VARIGNY (1). Effect of poisons and of fresh water on *Beræ ovatus* ; *id.* (3).

In general those species which inhabit the shore can stand influence of fresh water better than those from deeper water ; *id.* (2).

Pelagia noctiluca owes its phosphorescence to a luminous micro-organism (*Bacterium pelagia*) ; DUBOIS.

The propagation of the phosphorescence of *Pteroides* is almost certainly a phenomenon of turgescence, and by no means due to nervous conduction ; KRUKENBERG (1).

A few data in some other phosphorescent *Cœlenterates* ; *id.* (2).

The marginal corpuscles of *Actinæ* are certainly not eyes, though they are most likely sensory; this function being, however, subordinate to their use as offensive weapons; BÉRANECK.

Effect of the electric light on various species; LACAZE-DUTHIERS (2).

Specimens of *Hydra* retired under piece of bark, preparatory to sexual reproduction; TIGHT.

In *Millepora plicata* young sexual cells are found in the ectoderm of the coenosarcal canals; the ova have a stalk, which can be broken and regenerated. The maturation of the ovum is described; the segmentation is indistinct. The embryo assumes the form of a solid blastosphere, and in this stage migrates into the gastrozoid; beyond this it was not traced. The origin of the sexual cells supports the view that the ectoderm of *Hydrozoa* is the original seat of the sexual cells; HICKSON (2).

In *Myriothele* the formation of the egg, and of the male elements, the fertilization and the earliest developmental changes are described; KOROTNEV (1).

Gonactinia prolifera (Sars) reproduces by transverse fission. Bud-like tentacles appear rather below the middle of the body and form two rings. Then an oral disc and oesophagus develop, and the upper part separates by a constriction. Some general observations on asexual reproduction of Actinians are added; BLOCHMANN & HILGER.

Weismann's view of the origin of the female sexual products of the *Hydromedusæ* is confirmed in the case of *Podocoryne*; ISHIKAWA.

In *Manicina areolata* the endoderm is formed by delamination; the supporting lamella is secreted by both endoderm and ectoderm; the fifth and sixth pairs of mesenteries develop as stated by Lacaze-Duthiers. The mesenteric filaments are ectodermal. In conclusion, observations are given on the origin of the *Anthozoa*, which is regarded as having been probably from a hydropolyp ancestry; WILSON, H. V.

Statements as to the time of sexual maturity of various species; LO BIANCO.

List of *Cœlenterata* in which parasitic castration has been observed; GIARD (1).

For a few remarks on records of hybridity, see SUCHETET.

Segmentation and formation of larva of *Lucernaria* described; also an abnormal individual of *L. octoradiata*; BERGH.

In *Epenthesis m'cradyi* the hydromedusa bears upon each of its four reproductive organs a number of Hydroid blastostyles, from which young *Melusæ* are produced by budding. This life history is quite exceptional, the bodies carried on the reproductive organs being true blastostyles, so that there is a recapitulation of larval stages without sexual reproduction; BROOKS (2).

In *Phyllorhiza punctata* the ephyra has eight, the next stage twenty-four, the next sixteen, and the adult eight marginal bodies. If the umbrella is injured, marginal bodies appear between the newly-formed flaps. *Crambensu mosaica* migrates up rivers to deposit its young. A new brown variety seems to have superseded the blue, except in Port Phillip. Freshwater Hydroids of Australia resemble those of Europe, though the marine forms differ widely; LENDENFELD (7).

In youngest *Fungia* observed there is a stalk and vertical thecal walls; 6 septa are larger than the rest, and have others intercalated between them; the walls then spread out, and a disc is formed, which separates from the stalk by absorption across a plane in the top of the latter. The detached top leads a separate existence. The top of the stalk develops enlarged septa and a new mouth, so that a new disc is formed, which separates in the same manner as the old one; LISTER.

Larvæ, supposed to be those of *Peuchia hastata*, described; HADDON (1).

A young *Pennatula*, 7 mm. in length, is described, consisting only of the axial or terminal polyp, which has eight seizing arms, and is contained in a cup with eight processes. There are five buds, four lateral, one median; the last has no tentacles, and is on the surface usually, but erroneously, called ventral. The early stages of *Pennatula* and *Renilla* are compared; JUNGENSEN.

Development of the *Hydroida*; TIKHOMEROV.

Arachnactis is not the larval form of *Edwardsia*. Both this genus and *Cerianthus* are bilateral throughout life. The primordial Anthozoon was a free-swimming bilateral animal, provided with an invaginated buccal tube, held in position by septa, producing eggs, not buds, and developing continuously. The fixed condition is secondary, and characterised generally by asexual reproduction; VOGT (1).

A number of specimens of *Scyphistoma*, though kept under observation for ten days, showed no sign of strobilization; several explanations are suggested; FISCHER (2).

The development of a species of *Oceania* is described, in which occur buds, which, like egg-embryos, recapitulate the larval stage through which the parent has already passed. In this case the continuity of the germ-layers is unbroken; BROOKS (1).

The species in various families are classed under the headings, having the value of subfamilies, *Actinulipares*, *Planulipares*, and *Medusipares*; DU PLESSIS.

Note on the inversion of *Hydra*; MITSUKURI.

Protozoon parasite on *Hydra*; TURNER.

Two cases of fish which live for protection among the tentacles of Anemones; SLUITER.

Orula acicularis, living on *Gorgonia flabellum*, resembles it closely in colour; the same is the case with *Pedicularia*, which also lives on corals; MALTZAN.

Utility of sections in study of fossil forms maintained; FOERSTE: reply; JAMES.

MS. of Desmarest & Lesueur explanatory of certain rare plates; PERGENS.

GEOGRAPHICAL DISTRIBUTION.

The characteristic features of the different coral regions are discussed; the general distribution of certain important genera is given, and a list of widely spread forms is added; ORTMANN, pp. 182-188.

Existence of deep-sea *Medusa* discussed and answered provisionally in the affirmative; FEWKES (1).

Pelagic forms in deep-water; CHUN (1).

General observations on distribution; LLERENA.

Arctic Province.

White Sea. VAGNER.

Plankayon hyalinus, n. g. & sp., pp. 195 & 196.

Boreal Province.

New England. *Medusa* treated, with *Hydrichthys mirus*, n. g. & sp.; FEWKES (3).

Quebec. Some Graptolites recorded; FORD.

N. Atlantic. *Egir*, *Fenja*, n. gg.; DANIELSEN. 2 new species; GRIEG (2).

Monter. List, with notes; *id.* (1).

Celtic Province.

British Isles. Catalogue of Palaeozoic fossils; ETHERIDGE. Some remarks on fossil corals; PATTISON.

Feroe Channel and Irish Coast. 8 species, 1 new genus; MARSHALL & FOWLER.

West of Scotland. Several species recorded; HOYLE.

Loch Etive. *Cerianthus membranaceus*, 71 fath.; BELL (3).

Argyllshire. *Diphyphyllum*, n. sp.; THOMSON.

St Andrews. Occurrence of *Leseuria vitrea*, M.-Edw., and sudden appearance of *Lucernaria*; M'INTOSH.

Dumfriesshire. *Lithostrotion*, n. sp.; THOMSON.

Moffat. Notes on Graptolites; DAIRON.

Cumberland. Occurrence of few fossil corals, none new; MARR & NICHOLSON.

Wenlock Shales. VINE.

Stratford. *Heterastraea*, n. g. & sp.; TOMES.

France. *Physalia pelagica* apparently carried by current from Gulf of Mexico; THÉRY.

English Channel. *Rathkea octopunctata*, Sars; GIARD (3).

Wimereux. Occurrence of a few species noted; *id.* (4).

Pas-de-Calais. 55 Hydroids, none new; BÉTENCOURT. See also GIARD (2).

Cotes-du-Nord. *Edwardsia lucifuga*, n. sp.; FISCHER (1).

Continent of Europe.

Bohemia. Anthozoa from chalk, with many new species; POCTA.

Moravia. Discussion of certain Miocene Corals, with 8 new species; PROCHÁZKA.

Lake Balaton. DADAY.

Lusitanian Province.

Bay of Biscay. *Adamsia palliata*; DURÈGNE.

Villefranche. List of Hydroids, with notes; DU PLESSIS.

Algiers. *Fascicularia*, n. g.; VIGUIER.

Canary Is. Observations on *Siphonophora*, with several new species; CHUN (2).

Azores. 10 Hydroids; ALLMAN.

Mid. N. Atlantic. *Cryptolaria diffusa*, n. sp.; *id.*

South African Province.

S. Atlantic. 17 Hydroids; ALLMAN.

Cape of Good Hope. 10 Hydroids; *id.*

Kerguelen I. *Halcampa kerguelensis*, n. sp.; HERTWIG. 14 Hydroids; ALLMAN.

Indo-Pacific Province.

Red Sea. List of corals; *Galaxea*, n. sp.; FAUROT.

Suez Canal. The whole question of the migration through the Suez Canal is exhaustively treated, with lists of the species which are supposed to have passed through, and a discussion of each case; KRUKENBERG (3).

Criticisms on this work; KELLER.

Mergui Archipelago. 13 species, 7 new; RIDLEY. *Myriactis*, n. g., *Hormathia*, n. sp.; HADDON (2).

East Indies. 17 Hydroids; ALLMAN.

Philippines. *Spongodes semperi*, n. sp.; STUDER (1). *Actiniuria*, 4 new species; HERTWIG.

Pacific Ocean. 4 new species, *Aulorchis*, n. g., from deep water; *id.*

Australo-Zealanian Province.

Australian Seas. List of 12 Rhizostome *Medusæ*, with 2 new species, 1 new genus; LENDENFELD (8). General remarks on the fauna as regards Sponges and Cœlenterates; *id.* (2). 20 Hydroids; ALLMAN. List of species (18 new species, *Azygoplus*, n. g.), with descriptions, notes, and figures; BALE.

New Zealand. *Plumularia turgida*, n. sp.; *id.*

Japanese Province.

Japan. 4 Turbinoliids (2 new species); MARENZELLER. *Spongodes*, 6 new species; STUDER (1).

Pacific Ocean. 5 Hydroids; ALLMAN.

Antarctic Province.

Patagonia. *Phellia spinifera*, n. sp.; HERTWIG. 11 Hydroids;
ALLMAN.

Patagonian Province.

Off Monte Video. 2 new species; HERTWIG.

Argentine Republic. BURMEISTER.

Caribbean Province.

West Indies. 6 Hydroids; ALLMAN.

St. Thomas. *Xiphigorgia ridleyi*, n. sp.; BELL, F. J. (1).

Bahamas. *Epenthesia mocradyi*, n. sp.; BROOKS (2). *Pennatula bellissima*, n. sp.; FOWLER (1).

Transatlantic Province.

Deep sea forms from the American Coast discussed, with numerous figures of recently discovered forms; AGASSIZ, pp. 128-156.

New York. Fossils; HALL & SIMPSON.

W. N. Atlantic. 2 Hydroids; ALLMAN.

Iowa. Several species from the Coal Measures; KEYES.

Texas. *Hindeastrea*, n. g.; WHITE.

Bermuda. List of species, none new; HEILPRIN (2). 2 new species, *Ilyanthopsis*, n. g.; HERTWIG.

Cincinnati. Revision of the *Monticuliporidae*; JAMES, U. P. & J. F.

Nantucket. *Mnemiopsis leidyi* in fresh water; SHARP.

CTENOPHORA.

LOBATE.

Bolina hydatina; CHUN, (1) p. 61.

HYDROZOA.

CRASPEDOTA.

TRACHYMEDUSÆ.

CUNANTHIDÆ.

Gastrodes, n. g., for *G. parasiticum*, n. sp., from the gelatinous tissue of *Salpa fusiformis*; KOROTNEV, (3) p. 654, pl. xl, figs. 1-6

Hydrichthys, n. g., for *H. mirus*, n. sp., a hydroid colony infesting *Seriola zonata*, Cuv. From a leathery basal plate arises a branching

naked colony with numerous *Medusa* buds. The hydranths have no tentacles, and the organism appears to be truly parasitic. The *Medusa* which are set free pass through a two-tentacled to a four-tentacled stage, but could not be reared further. The species resembles both *Siphonophora* and *Hydromedusa*; FEWKES, (3) pp. 224-232, pls. iv & v.

HYDROIDA.

The *Hydroida* are classified thus :—

Suborder I. GYMNOBLASTEÆ : *Tubularinæ*, *Hydractininæ*, *Corymorphinæ*, *Hydrolarinæ*.

„ II. CALYPTOBLASTEÆ : *Campanularinæ*, *Sertularinæ*, *Plumularinæ*, *Thalamophora*.

„ III. ELEUTHEROBLASTEÆ : *Hydrinæ*.

„ IV. HYDROCORALLIA : *Milleporinæ*, *Stylasterinæ*.

„ V. MONOPSEA : *Trachomedusæ*, *Narcomedusæ*.

„ VI. RHABDOPHORA : *Graptoloidea*, *Retioloidea*.

ALLMAN, pp. lii & liii.

GYMNOBLASTEÆ.

BOUGAINVILLIDÆ.

Stylactis vermicola, n. sp., N. Pacific; ALLMAN, p. 2, pl. i, fig. 2.

EUDENDRIDÆ.

Eudendrium vestitum, n. sp., Heard I.; ALLMAN, p. 3, pl. i, fig. 1.

MONOCAULIDÆ, n. fam.

Monocaulus imperator, Allm., 1885, fully described, with figures; ALLMAN, p. 5, pl. iii, figs. 1-7.

CALYPTOBLASTEÆ.

CAMPANULARIDÆ.

Calamophora, n. g.: stolon creeping; hydrothecæ lageniform, inoperculate, almost sessile; gonangia oviform, subsessile; for *C. parvula*, n. sp., Bass St.; ALLMAN, pp. 28 & 29, pl. x, fig. 3.

Campanularia insignis, Bermuda, p. 19, pl. ix, figs. 1 & 2, *C. tulipifera*, Heard I., p. 20, pl. x, fig. 1, *C. ptychocyathus*, Bahia, *ibid.*, pl. x, fig. 2, *C. retroflexa*, Honolulu, p. 21, pl. xi, fig. 1, *C. chelonice*, hab.?, p. 22, pl. xi, fig. 2, n. spp.; *id. t. c.*

Campanularia (?) *spinulosa*, p. 756, pl. xii, figs. 5-7, *C.* (?) *serrulata*, p. 757, pl. xii, fig. 4, n. spp., Port Jackson; BALE.

Epenthesis maccradyi, n. sp., Nassau, Bahamas; BROOKS (2).

Halisiphonia, n. g.: stolon monosiphonic; hydrothecæ inoperculate, entire margin; wall not adnate to the hydrocaulus; hydranth with conical hypostome; for *H. megalothea*, n. sp., S. of Australia, 2600 fath.; ALLMAN, pp. 30 & 31, pl. xvi, fig. 1.

Hebella, n. g.: stolon creeping, monosiphonic; hydrothecæ cylindrical, margin entire, inoperculate; for *H. striata*, n. sp., Magellan's St.; *id. t. c.* pp. 24 & 30, pl. xv, fig. 3.

Hypanthea aggregata, Kerguelen, p. 26, pl. xiv, fig. 1, *H. hemispherica*, Falkland Is., p. 27, pl. xiv, fig. 2, n. spp.; *id. t. c.*

Obelia angulosa, n. sp., Paramatta River; BALE, p. 752, pl. xii, fig. 3.

Thyrosocyphus simplex, n. sp., Cape York; ALLMAN, p. 25, pl. xiii, figs. 1 & 2.

PERISIPHONIDÆ.

Cryptolaria humilis, off Azores, 1000 fath., p. 39, pl. xviii, fig. 1, *C. abyssicola*, S. of Australia, 2600 fath., p. 40, pl. xviii, fig. 2, *C. flabellum*, W. Indies, *ibid.*, pl. xix, fig. 1, *C. pulchella*, Honolulu, *ibid.*, pl. xix, fig. 2, *C. crassicaulis*, off Ascension, p. 41, pl. xix, fig. 3, *C. geniculata*, Fiji, *ibid.*, pl. xx, fig. 1, *C. gracilis*, N. Zealand, p. 42, pl. xx, fig. 2, *C. diffusa*, off Sierra Leone, 2500 fath., *ibid.*, pl. xxi, fig. 1, n. spp.; ALLMAN.

Lafoea scandens, n. sp., Port Jackson; BALE, p. 758, pl. xiii, figs. 16-19.

Lictorella, n. g.: hydrocaulus of an axial tube enveloped by peripheral tubes, but free distally; hydrothecæ cylindrical, pedunculate, inoperculate, with entire margin; walls never adnate to the hydrocaulus; for *L. halecioides*, Allm., and *L. cyathifera*, n. sp., New Hebrides; ALLMAN, p. 36, pl. xi, fig. 3.

Perisiphonia, n. g.: resembles *Cryptolaria*, but the hydrothecæ have peduncles, and the axial tube never becomes free from the peripheral ones; sarcod-bearing receptacles present; for *P. filicula*, Azores and Australia, p. 44, pl. xxii, figs. 1-4, *P. pectinata*, p. 45, pl. xxi, fig. 2, n. spp.; *id.*

HALECIIDÆ.

Halecium arboreum, Kerguelen I., p. 10, pl. iv, figs. 1-3, *H. telescopicum*, Port Jackson, *ibid.*, pl. v, fig. 1, *H. flexile*, Marion I. and Patagonia, p. 11, pl. v, fig. 2, *H. fastigiatum*, Tristan da Cunha, p. 13, pl. xv, fig. 2, *H. dichotomum*, Cape of Good Hope, *ibid.*, pl. vi, figs. 1-4, *H. cyniforme*, Patagonia, p. 15, pl. vii, figs. 1-5, n. spp.; ALLMAN. *H. gracile*, p. 759, pl. xiv, figs. 1-3, Port Stephens, Port Jackson, *H. parvulum*, p. 760, pl. xiv, figs. 4 & 5, Bondi Bay; BALE.

Diplocyathus, n. g. : hydrothecæ replaced by hydrophores, each with an accessory cup at its base ; for *D. dichotomus*, n. sp., Cape York ; ALLMAN, pp. 16 & 17, pl. viii, figs. 1-3.

SERTULARIDÆ.

Desmocyphus pectinatus, Bass St. and Bahia, p. 71, pl. xxxiv, fig. 1, *D. gracilis*, Bermuda, *ibid.*, pl. xxxiv, fig. 2, *D. obliquus*, Cape York, p. 72, pl. xxxiv, fig. 3, *D. acanthocarpus*, Bahia, p. 73, pl. xxxv, fig. 2, n. spp. ; ALLMAN.

Dictyocladium, n. g. : hydrocaulus ramified, monosiphonic, branching in a single plane ; for *D. dichotomum*, n. sp., Bass St. ; *id.* pp. 76 & 77, pl. xxxvi, fig. 2.

Hypopyxis, n. g. : hydrothecæ adnate, each with two minute cup-shaped basal appendages ; for *H. labrosa*, n. sp., Australia ; *id.* p. 74, pl. xxxv, fig. 1.

Sertularella longithecæ, p. 762, pl. xvi, figs. 5 & 6, Port Denison, *S. variabilis*, p. 764, pl. xv, figs. 5-9, Bondi, *S. cylindrica*, p. 765, pl. xvi, fig. 7, Port Jackson ; BALE.

Sertularia filiformis, Patagonia, p. 51, pl. xxiv, fig. 1, *S. annulata*, Port Jackson, p. 52, pl. xxiv, fig. 2, *S. leiocarpa*, Tristan da Cunha, *ibid.*, pl. xxv, fig. 1, *S. secunda*, Kerguelen I., p. 53, pl. xxv, fig. 2, *S. clausa*, off Monte Video, p. 54, pl. xxv, fig. 3, *S. implexa*, off Patagonia, *ibid.*, pl. xxvi, fig. 1, *S. laxa*, Azores, p. 55, pl. xxvi, fig. 2, *S. exserta*, Heard I., p. 56, pl. xxvii, fig. 1, *S. echinocarpa*, Kerguelen, p. 57, pl. xxviii, fig. 1, *S. catena*, W. Indies, p. 58, pl. xxviii, fig. 2, *S. producta*, Philippines, p. 59, pl. xxviii, fig. 3, *S. cylindrithecæ*, Bahia, *ibid.*, pl. xxix, fig. 1, *S. integrithecæ*, Bahia, p. 60, pl. xxix, fig. 2, *S. articulata*, Kerguelen, p. 61, pl. xxix, fig. 3, n. spp. ; ALLMAN.

Sertularia geniculata, n. sp., Australia ; BALE, p. 768, pl. xvii, figs. 6-11.

Staurotheca, n. g. : hydrothecæ in decussating pairs ; for *S. dichotoma*, n. sp., Marion Is. ; ALLMAN, p. 76, pl. xxxvi, fig. 1.

Syntheicum campylocarpum, p. 78, pl. xxxvii, fig. 1, *S. alternans*, p. 80, pl. xxxvii, fig. 2, n. spp., off Port Jackson ; *id.*

Thecocladium flabellum, n. sp., Cape of Good Hope ; *id.* p. 81, pl. xxxviii, figs. 1-4.

Thuiaria pharmacopola, Azores, p. 66, pl. xxxi, fig. 1, *T. rineta*, Flinders' Passage, p. 68, pl. xxxii, fig. 2, *T. hyalina*, off Pernambuco, p. 69, pl. xxxiii, fig. 2, n. spp. ; *id.* *T. sinuosa*, n. sp., Port Molle ; BALE, p. 772, pl. xviii, figs. 9 & 10.

GRAMMARIDÆ.

Grammaria stentor, Kerguelen, p. 48, pl. xxiii, fig. 1, *G. magellanica*, Falkland Is., *ibid.*, pl. xxiii, fig. 2, *G. insignis*, p. 49, pl. xxiii, fig. 3, n. spp. ; ALLMAN.

PLUMULARIDÆ.

Azygoplon, n. g., for *Plumularia producta*, Bale, Australia ; BALE, pp. 773 & 774, pl. xix, figs. 1-5.

Plumularia turgida, p. 779, pl. xx, figs. 12 & 13, Lyttleton, N. Z., *P. caliculata*, p. 780, pl. xx, figs. 9 & 10, Bondi Bay, Port Jackson, *P. alata*, p. 782, pl. xix, figs. 6-10, hab. ?, *P. aurita*, p. 784, pl. xix, figs. 15-19, n. spp. ; *id.*

AGLAOPHENIDÆ.

Aglaophenia sinuosa, p. 790, pl. xxi, figs. 1 & 2, Port Denison, *A. macrocarpa*, p. 791, pl. xxi, figs. 3 & 4, Port Jackson, *A. phyllocarpa*, p. 793, pl. xxi, figs. 9 & 10, Port Denison, *A. (?) whiteleggei*, p. 794, pl. xxi, fig. 8, hab. ? ; BALE.

HYDROCORALLIA.

STROMATOPORIDÆ.

Ardnorhisa, n. g. ; WENTZEL, (2) p. 17.

Circopora, n. g. ; *id. t. c.* p. 20.

Dijectopora, n. g. ; *id. t. c.* p. 15.

Irregulatopora, n. g. ; *id. ibid.*

INCERTÆ SEDIS.

Mitcheleania gregaria, n. sp., Carboniferous, Scotland ; NICHOLSON, (2) p. 17, figs. 1 & 2.

Solenopora ? filiformis, n. sp., Ardoevician, Scotland ; *id. t. c.* p. 21, fig. 4.

SIPHONOPHORA.

The 'Challenger' Report is a complete monograph of this group. In the introduction the general morphology and special anatomy of the group are discussed ; a new view of their organisation, entitled the "Medusome theory," is propounded, in virtue of which the various parts of a colony may be "either medusiform persons, or special organs of the same," and this "whether they bud out from a common basis on the stem, or arise in different positions, in consequence of kinogenetic migration or dislocation." The *Siphonophora* are divided into two subclasses : the *Disconanthæ*, which are regarded as having been developed from *Craspedotæ* ; and the *Siphonanthæ*, of which the *Anthomedusæ* are considered to be the ancestors. There is an extensive bibliography, table of terminology, and a systematic list of the whole class ; HÆCKEL.

Hæckel's medusome theory criticised ; CHUN (2).

DISCONNECTÆ.

DISCALIDÆ, n. fam.

Discalia, n. g., for *D. medusina*, n. sp., S. Pacific ; HÆCKEL, (1) pp. 45 & 46, pl. xlix, figs. 1-6.

Disconalia, n. g., for *D. gastroblasta*, n. sp., S. Pacific ; *id. t. c.* p. 48, pl. xlix, figs. 7-12, pl. l, figs. 1-10.

PORPITIDÆ.

Porpalia, n. g., for *P. prunella*, n. sp., Tropical Pacific ; *id. t. c.* pp. 57 & 58, pl. xlviii.

Porpema, n. g., for *P. medusa*, n. sp., S. Atlantic ; *id. t. c.* pp. 60 & 61, pl. xlvii.

Porpita fungia, n. sp., N. Pacific ; *id. t. c.* p. 67, pl. xlv.

Porpitella, n. g., for *P. pectanthis*, n. sp., N. Pacific ; *id. t. c.* pp. 63 & 64, pl. xli.

VELELLIDÆ.

Armenista, n. g., = *Velaria*, Hæckel (*præocc.*) ; *id. t. c.* p. 83. *A. sigmoides*, n. sp., Tropical Atlantic ; *id. t. c.* p. 84, pl. xliii.

Rataria cristata, n. sp., Tropical Atlantic ; *id. t. c.* p. 79, pl. xlv.

CALYCONNECTÆ.

EUDOXIDÆ.

Aglaisma gegenbauri, n. sp., Tropical Atlantic ; HÆCKEL, (1) p. 119, pl. xl.

Amphiroa carina, n. sp., Tropical Atlantic ; *id. t. c.* p. 114, pl. xxxvi.

Cuboides crystallus, n. sp., Tropical Atlantic ; *id. t. c.* p. 112, pl. xlii.

Eudoxella, n. g., probably only monogastric generation of *Praya* ; *id. t. c.* p. 108.

Sphenoides obeliscus, n. sp., Canary Is. ; *id. t. c.* p. 116, pl. xxxviii.

ERSÆIDÆ.

Ersæa compressa, n. sp., Tropical and Temperate Atlantic ; HÆCKEL, (1) p. 123, pl. xxxiv.

Lilæa, n. g., for *L. medusina*, undescribed, probably cormidia of *Lilyopsis*, sp. ; *id. t. c.* p. 124.

MONOPHYIDÆ.

Cymba crystallus, n. sp., Atlantic Ocean ; HÆCKEL, (1) p. 138, pls. xli & xlii (probably a stage in the development of *Cuboides crystallus*, *vide supra*).

Cymbonectes, n. g., for *C. huxleyi*, n. sp., Ceylon ; *id. t. c.* p. 124, pl. xxvii, figs. 1-12.

Doramasia, n. g., for *D. picta*, n. sp., Canary Is. ; CHUN (2).

Halopyramis, n. g., for *H. adamantina*, n. sp., Canary Is. ; *id. t. c.*

Mitrophyes, n. g., for *M. peltifera*, n. sp., Atlantic ; HÆCKEL, (1) p. 131, pl. xxviii.

Monophyes princeps, n. sp., Indian Ocean ; *id. t. c.* p. 129, pl. xxvii, figs. 13 & 14. *M. brevitrunca*, n. sp., Canary Is. ; CHUN (2).

DIPHYIDÆ.

- Abylu carina*, n. sp., Atlantic; HÆCKEL, (1) p. 156, pls. xxxv & xxxvi.
Abylopsis, n. n. for *Calpe*, Q. & G. (nec Treitschke); CHUN (2). *A. quincunx*, n. sp., Canary Is.; *id.*
Bassiu obeliscus, n. sp., N. Atlantic; HÆCKEL, (1) p. 160, pls. xxxvii & xxxviii.
Calpe gegenbauri, n. sp., Atlantic; *id. t. c.* p. 164, pls. xxxix & xl.
Ceratocymbu, n. g., for *O. spectabilis*, n. sp., Canary Is.; CHUN (2).
Diphyes serrata, n. sp., Canary Is.; *id. t. c.*
Diphyopsis, n. g., for *D. compressa*, n. sp., Atlantic; HÆCKEL, (1) p. 153, pls. xxxiii & xxxiv.
Epibulia inflata, *E. monoica*, n. spp., Canary Is.; CHUN (2).
Praya galea, n. sp., Atlantic; HÆCKEL, (1) p. 146, pls. xxxi & xxxii.

AMPHICARYONIDÆ, n. subf.

- Amphicaryon*, n. g., for *A. acaule*, n. sp., Canary Is.; CHUN (2).

DESMOPHYIDÆ, n. fam.

- Desmalia*, n. g., for *D. imbricata*, n. sp., undescribed, Pacific and Indian Oceans; HÆCKEL, (1) p. 168.
Desmophyes, n. g., for *D. annectens*, n. sp., Indian Ocean; *id. t. c.* pp. 169 & 170, pl. xxx.

POLYPHYIDÆ.

- Hippopodius*, early post-embryonic stage; CHUN (2).
Polyphyes, n. g., for *P. angulata*, n. sp., Atlantic; HÆCKEL, (1) pp. 178 & 179, pl. xxix, figs. 1-8.
Vogtia köllikeri, n. sp., S. Atlantic; *id. t. c.* p. 182, pl. xxix, figs. 9-14.

STEPHANOPHYIDÆ, n. fam.

- Stephanophyes*, n. g., for *S. superba*, n. sp., Canary Is.; CHUN (2).

PHYSONECTÆ.

CIRCALIDÆ, n. fam.

- Circulia*, n. g., for *C. stephanoma*, n. sp., off Norway; HÆCKEL, (1) p. 198, pl. xxi, figs. 1-4.

ATHORIDÆ, n. fam.

- Athoralia*, n. g., for *A. coronula*, n. sp., undescribed, Ceylon; *id. t. c.* p. 204.

Athoria, n. g., for *A. larvalis*, n. sp., Ceylon; *id. t. c.* pp. 201 & 202, pl. xxi, figs. 5-8.

APOLEMIDÆ.

Dicymba, n. g., for *D. diphyopsis*, n. sp., Indian Ocean; HÆCKEL, (1) pp. 209 & 210, pl. xviii, figs. 1-7.

AGALMIDÆ.

Agalma eschscholtzii, n. sp., Ceylon; HÆCKEL, (1) p. 221, pl. xviii, figs. 8-17. *A. clausi*, n. sp., Villefranche, referred to *Crystallodes*, Hkl., in a postscript; BEDOT.

Anthemodes ordinata, n. sp., Canary Is.; HÆCKEL, (1) p. 229, pls. xiv, & xv.

Crystallodes vitrea, n. sp., Ceylon; *id. t. c.* p. 222, pl. xvii.

Lychnagalma, n. g., for *L. vesicularia*, n. sp., Ceylon; *id. t. c.* pp. 234 & 235, pl. xvi.

Nanomia cara, A. Ag., described with figures; FEWKES, (3) pp. 213-223, pls. i-iii: referred to *Cupulita*; HÆCKEL, (1) p. 367.

FORSKALIDÆ.

Forskalia tholoides, n. sp., Canary Is.; HÆCKEL, (1) p. 244, pls. viii-x. *F. cuneata*, n. sp., Canary Is.; CHUN (2).

Forskaliopsis, n. g., for *F. magnifica*, n. sp., undescribed, Indian Ocean; HÆCKEL, (1) p. 247.

Strobalia, n. g., for *S. conifera*, n. sp., undescribed, Indian Ocean; *id. t. c.* p. 242.

NECTALIDÆ, n. fam.

Nectalia, n. g., for *N. loligo*, n. sp., Canary Is.; HÆCKEL, (1) pp. 251 & 252, pl. xiii.

DISCOLABIDÆ.

Discolabe quadrigata, n. sp., Ceylon; HÆCKEL, (1) p. 263, pls. xix & xx.

ANTHOPHYSIDÆ.

Anthophysa darwinii, n. sp., S. Atlantic; HÆCKEL, (1) p. 278, pl. xii, figs. 7-9.

Athyrbia ocellata, n. sp., Canary Is.; *id. t. c.* p. 276, pl. xi, pl. xii, figs. 10-18.

Melophysa, n. g., for *M. melo* (Q. & G.), St. of Gibraltar; *id. t. c.* p. 274.

PLÆOPHYSIDÆ, n. fam.

Plæophysa, n. g. : provided with a hood (= the modified nectostem), the stem reduced to a globular sac ; nectocalyces and hydrophyllia wanting ; for *P. agassizii*, n. sp., Atlantic, surface ; FEWKES (2).

This organism is an Anthophysid, "which has lost its bracts, and the pneumatophore of which, highly retracted, is embraced on the vertical side by the prominent cucullate nectostyle ;" HÆCKEL, (1) p. 280.

AURONECTÆ.

STEPHALIDÆ, n. fam.

Stephalia, n. g., for *S. corona*, n. sp., N. Atlantic and Færoe Channel ; HÆCKEL, (1) p. 297, pl. vii.

Stephonalia, n. g., for *S. bathyphysa*, n. sp., S. Pacific ; *id. t. c.* p. 299, pl. vi.

RHODALIDÆ, n. fam.

Auralia, n. g., for *A. profunda*, n. sp., undescribed, Tropical Atlantic ; HÆCKEL, (1) p. 301.

Rhodalìa, n. g., for *R. miranda*, n. sp., S. Atlantic ; *id. t. c.* p. 302, pls. i-v.

OYSTONECTÆ.

CYSTALIDÆ, n. fam.

Cystalia, n. g., for *C. monogastrica*, n. sp., S. Pacific and Ceylon (= *C. larcalis* and *C. challengerii* of HÆCKEL, (2) p. 44) ; *id. t. c.* p. 316, pl. xxii, figs. 1-5.

RHIZOPHYSIDÆ.

Aurophysa, n. g., for *A. ordinata*, n. sp., undescribed, Ceylon ; HÆCKEL, (1) p. 323.

Cannophysa, n. g., for *C. murrayana*, n. sp., Canary Is. ; *id. t. c.* p. 324, pl. xxiv.

Linophysa, n. g., for *Rhizophysa conifera*, Studer ; *id. t. c.* p. 326.

Nectophysa, n. g., for *N. wyvillei*, n. sp., Canary Is. ; *id. t. c.* pp. 326 & 327, pl. xxiii.

Pneumophysa, n. g., for *P. gegenbauri*, n. sp., undescribed, Indian Ocean ; *id. t. c.* p. 328.

SALACIDÆ, n. fam.

Salacia, n. g., for *S. polygastrica*, n. sp., Tropical Atlantic ; HÆCKEL, (1) pp. 330 & 331, pl. xxv.

EPIBULIDÆ, n. fam.

Epibulia ritteriana, n. sp., Ceylon; HÆCKEL, (1) p. 335, pl. xxii, figs. 6-8.

PHYSALIDÆ.

Alphota giltschiana, n. sp., Canary Is. ; HÆCKEL, (1) p. 348, pl. xxvi, figs. 1-3.

Arethusa, n. g., for *A. challenger*, n. sp., N. Atlantic ; *id. t. c.* p. 349, pl. xxvi, figs. 4-8.

Caravella, n. g., for *C. gigantea* (Boy.) & *C. maxima*, n. n. (= *Medusa caravella*, O. F. M.), Atlantic Ocean ; *id. t. c.* p. 351.

ACRASPEDA.

EPHYRIDÆ.

Nauphanta polaris, n. sp. ; FEWKES, (1) p. 173.

Nauphantopsis, n. g. ; *id. ibid.*

RHIZOSTOMIDÆ.

Phyllorhiza punctata, n. sp., Port Jackson ; LENDENFELD, (8) p. 223, pl. xviii, fig. 2.

STHENONIDÆ.

Callinema ornata, Verrill, described and figured ; FEWKES, (3) pp. 234-236, pl. vi.

CHAUNOSTOMIDÆ.

Pseudorhiza, n. g., for *P. aurosa*, n. sp., Port Phillip ; LENDENFELD, (8) p. 218, pl. xviii, fig. 1.

ANTHOZOA.

ZOANTHARIA.

MADREPORARIA.

APOROSA.

TURBINOLIDÆ.

Caryophyllia japonica, n. sp., Japan ; MARENZELLER, p. 16. *C. gemmata*, p. 322, pl. iv, fig. 1, *C. krejčii*, pl. i, fig. 5, *C. amicta*, pl. 1, fig. 6, *C. grandiformis*, pl. ii, fig. 6, n. spp., Miocene, Moravia ; PROCHÁZKA.

Pseudocaninia, n. g., for (*Turbinolia conica*, Fischer), *P. trautscholdi* and *P. nana*, n. spp., fossil ; STUCKENBERG, (2) pp. 12-16.

- Sphenotrochus boytonensis*, n. sp., Coralline Crag, Britain; BELL, A.
Stephanotrochus spiniger, n. sp., Japan; MARENZELLER, p. 20. *S. varians*, n. sp., Miocene, Moravia; PROCHÁZKA, pls. i, fig. 3, & iv, fig. 6.
Trochocyathus coroides, *T. impar*, n. spp., Miocene, Moravia; *id. t. c.* p. 315, pl. ii, fig. 4 & 5. *T. moravicus*, n. sp.; *id. t. c.* p. 322, pl. iv, fig. 4.

OCULINIDÆ.

- Placohelia*, n. g., for *P. rimosa*, n. sp., Bohemia, Chalk; POČTA, p. 49, pl. ii, fig. 7.
Synhellia reptans, n. sp., Bohemia, Chalk; *id.* p. 50, pl. ii, fig. 8, cut 28.

POCILLOPORIDÆ.

Pocillopora. A series of 33 specimens of this genus, which form a complete series of transitional types, described; ORTMANN, pp. 162-165.

ASTRÆIDÆ.

- Amphiastrea gracilis*, n. sp., Jurassic, Switzerland; Koby, p. 434.
Aplosmilia thurmanni, n. sp., Jurassic, Switzerland; *id. t. c.* p. 456.
Astrocænia cribellum, n. sp., Cenomanian, Bohemia; POČTA, p. 48.
Cheilosmilia, n. g., for *C. microstoma*, n. sp., Jurassic, Switzerland; Koby, p. 420.
Confusastræa major, n. sp., Dogger, Alsace; MEYER, p. 35.
Cryptocænia obscura, n. sp., Bohemia, Chalk; POČTA, p. 46, pl. ii, fig. 4, cut 24.
Epismilia elongata, p. 441, *E. contorta*, p. 442, *E. irregularis*, p. 442, *E. inflata*, p. 443, *E. tenuis*, p. 444, *E. obesa*, p. 445, n. spp., Jurassic, Switzerland; Koby.
Galaxea anthophyllites, n. sp., Red Sea; FAUROT, p. 119.
Glyphastræa to be abandoned in favour of *Septastræa*; HINDE. *G. forbesi*, Ed. & H., = *G. sexradiata* (Lonsdale); DUNCAN.
Goniastrea sericea, n. sp., Fiji; ORTMANN, p. 173, pl. vi, fig. 7.
Heterastræa, n. g., for *H. murchisoni* (Wright), *H. evashani* (Dunc.), and *H. bintonensis*, n. sp., fossil, Stratford; TOMES.
Hindeastræa, n. g., for *H. discoidea*, n. sp., Cretaceous, Texas; WHITE.
Isastræa splendida, Bohemia, Chalk; POČTA, p. 39, pl. ii, fig. 3.
I. centrofossa, *I. subgreenoughi*, *I. decorata*, n. spp., Dogger, Alsace; MEYER, p. 27.
Lingulosmilia, n. g., p. 421, for *L. cornuta*, p. 422, *L. emarginata*, p. 423, *L. exarata*, p. 424, *L. vermicularis*, p. 425, n. spp., Jurassic, Switzerland; Koby.
Mæandrina delicatula, n. sp., Samoa; ORTMANN, p. 171, pl. vi, fig. 6.
Montlivaultia lubechei, M. Ed. & Haime (2 n. varr.—*cyclolitoides* and *numismalis*, Dogger, Alsace; MEYER, p. 9.
Pachygyra knorri, n. sp., Jurassic, Switzerland; Koby, p. 454.

Parasmilia pusilla, n. sp., Bohemia, Chalk ; POČTA, p. 44, figs. 21 & 22.

Phillipsastræa rossica ; STUCKENBERG, (2) p. 26.

Pleurosmilia maxima, p. 445, *P. incerta*, p. 446, *P. vesiculosa*, p. 447, *P. pumila*, p. 448, *P. bellis*, p. 449, *P. debilis*, p. 450, n. spp., Jurassic, Switzerland ; Koby.

Pseudothecosmilia, n. g., for *P. stalloni*, p. 428, *P. fromenteli*, p. 429, *P. bruntrutana*, p. 430, n. spp. Jurassic, Switzerland ; *id. t. c.*

Rhipidogyra ruetimeyeri, p. 452, *R. langi*, p. 452, *R. elegans*, p. 453, n. spp., Jurassic, Switzerland ; *id. t. c.*

Schizosmilia, n. g., for *S. excelsa*, p. 435, *S. rollieri*, p. 437, *S. corallina*, p. 437, n. spp., Jurassic, Switzerland ; *id. t. c.*

Sclerosmilia, n. g., for *S. rugosa*, p. 426, *S. laufonensis*, p. 427, n. spp., Jurassic, Switzerland ; *id. t. c.*

Stylina vadosa, n. sp., Bohemia, Chalk ; POČTA, p. 44, pl. ii, fig. 11, cut 23.

Thecidiosmilia, n. g., p. 430, for *T. valvata*, n. sp., p. 431, Jurassic, Switzerland ; Koby.

FUNGIDA.

PLESIOFUNGIDÆ.

Thamnastræa sancti quentini, n. sp., Dogger, Alsace ; MEYER, p. 38.

LOPHOSERIDÆ.

Comoseris interrupta, n. sp., Jurassic, Switzerland ; Koby, p. 407.

Cyathoseris facilis, n. sp., Bohemia, Chalk ; POČTA, p. 36, pl. ii, fig. 2.

PLESIOPORITIDÆ.

Microsalenia desari, p. 401, *M. jaccardi*, p. 401, *M. dubia*, p. 402, *M. cavernosa*, p. 403, n. spp., Jurassic, Switzerland ; Koby.

Thamnarea ? granulosa, *T. ? bacillaris*, n. spp., Jurassic, Switzerland ; *id. t. c.* p. 413.

PERFORATA.

EUPHAMMIDÆ.

Stephanophyllia celsa, n. sp., Bohemia, Chalk ; POČTA, p. 30, pl. i, fig. 7. *S. superstes*, n. sp., Sagami Bay, Japan, 100-200 fath. ; ORTMANN, p. 160, pl. vi, fig. 5.

MADREPORIDÆ.

Goniopora parvistella, n. sp., Samoa, Tonga ; ORTMANN, p. 158, pl. vi, fig. 3.

Madrepora. Catalogue of species in U. S. Nat. Mus. ; RATHBUN (1). *M. brachyclados*, n. sp., Fiji ; ORTMANN, p. 149, pl. vi, fig. 1.

Montipora stalagmites, Tahiti, p. 154, pl. vi, fig. 2, *M. scabriculoides*, Samoa, p. 155, n. spp.; *id. t. c.*

Turbinaria maxima, n. sp., Singapore; *id. t. c.* p. 160, pl. vi, fig. 4.

PORITIDÆ.

Cordilites, n. g., for *C. cretosus* (Reuss); POČTA, p. 23.

Glenarrea, n. g., for *G. cretacea*, n. sp., Bohemia, Chalk; *id. t. c.* p. 25, figs. 9 & 10.

Meandראה greppini, n. sp., Jurassic, Switzerland; Koby, p. 410.

Microsmilia, n. g., p. 414, for *M. matheyi*, n. sp., p. 418, Jurassic, Switzerland; *id. t. c.*

Porites branneri, n. sp., Parahybo do Norte, Pernambuco, and Bay of Bahia; RATHBUN, (2) p. 355. *P. taxilis*, p. 27, pl. i, fig. 6, *P. spissus*, p. 28, pl. i, fig. 5, n. spp., Bohemia, Chalk; POČTA.

RUGOSA.

Diphyphyllum argyllii, n. sp., Boulder Clay, Argyllshire; THOMSON.

Gshelia, n. g., for *G. rossillieri*; STUCKENBERG, (2) p. 24.

Lithontrotion paradoxicum, n. sp., Carboniferous, Dumfriesshire; THOMSON.

Lophophyllum stachurowskii; STUCKENBERG, p. 9.

Petalaxia kunthi; *id. t. c.* p. 23.

Rossophyllum, n. g., for *R. norum*, n. sp.; *id. t. c.* p. 11.

Zuphrentis nikitini; *id. t. c.* p. 8.

Cleistopora redefined, with notes on structure; NICHOLSON (4).

CORAL ISLANDS.

General statement of present state of question of origin of coral reefs; HICKSON (1).

The strength and direction of currents appear to be the main agents affecting coral growth, though the carriage of food by them is of subsidiary importance; "the growth of corals on the periphery of a bank being in great excess of growth in its inward portions, is sufficient to explain the formation" of atolls and barrier reefs without Murray's solution theory; BOURNE (2).

The theory of subsidence dismissed as inadequate to account for the formation of coral reefs; GUPPY (2).

Coral formations in progress of decay illustrated by the Bermudas; FEWKES (5).

Coral reefs of Red Sea described; WALTHER, FAUROT.

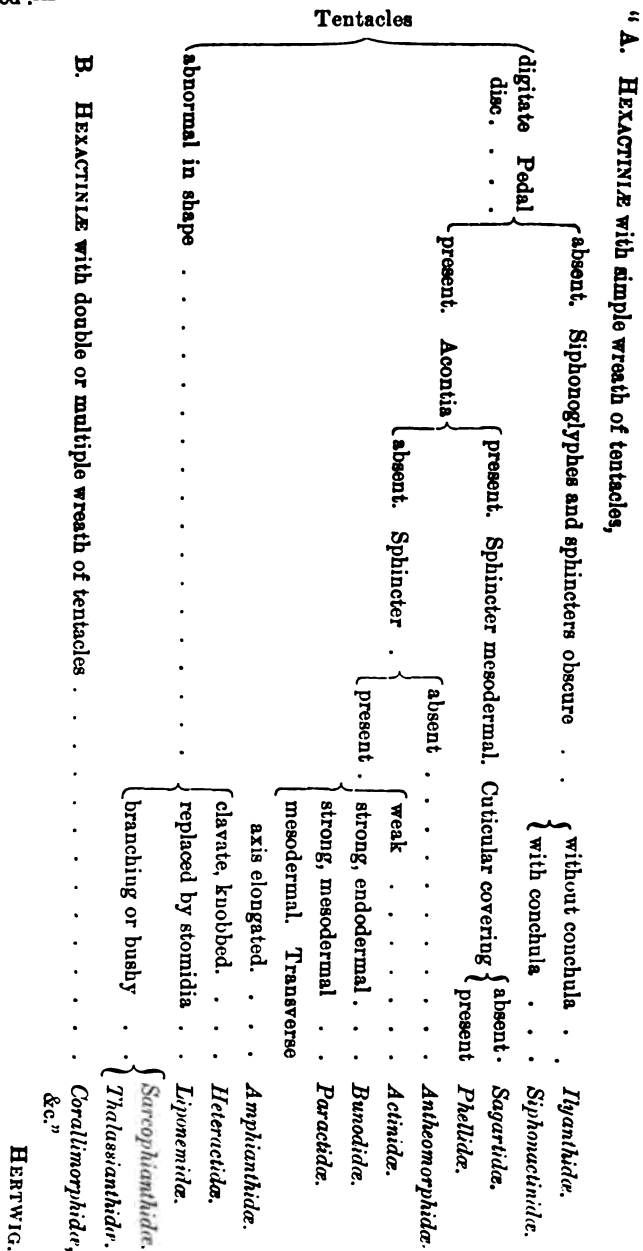
Occurrence of a 14-fathom bank in mid-ocean; WHARTON (2).

Florida Reefs. Detailed discussion with maps, sections, and figures of many species; AGASSIZ, pp. 52-92.

For discussion of various points in the modern theories regarding the formation of coral reefs and islands, see BOURNE (1), DRYER, GUPPY, IRVINE, MORRIS, MURRAY, READE, ROSS, WHARTON, WILSON-BAKER.

ACTINIARIA.

Andrés' classification is criticised, and the author's previously-proposed arrangement maintained. The following disposition of the *Hexactinia* is proposed :—



HEXACTINIÆ.

CORALLIMORPHIDÆ.

Corallimorphus oblectus, n. n., = *C. rigidus*, Hertwig, *pars* (nec Moseley); HERTWIG, p. 9.

ANTHEOMORPHIDÆ.

Ilyanthopsis, n. g.: "tentacles in several rows; body-wall smooth; body goblet-shaped, broadening upwards from the small pedal disc to the broad oral disc;" for *I. longifolia*, n. sp., Bermuda; HERTWIG, p. 13, pl. ii, fig. 2.

ACTINIDÆ.

Hormathia delicatula, n. sp., hab. ?; HERTWIG, p. 15, pls. ii, figs. 1 & 3, & iv, fig. 9. *H. andersoni*, n. sp., Mergui Archipelago; HADIMON, p. 251, pl. xx.

SAGARTIDÆ.

Bathyactis, n. g. proposed for *Chitonactis richardi*, Marion, and subsequently revoked; DUKÈNE (2). [*Nom. præocc.*]

LIPONEMIDÆ.

Aulorchis, n. g.: generative organs modified into a tube perforating the oral disc; gonidial grooves on both sides, drawn out into a long ear-like cone; for *A. paradoxa*, n. sp., off Valparaiso; HERTWIG, p. 21, pl. i, figs. 9 & 10, pls. iii, figs. 2-6, & iv, figs. 1-6.

PHIALACTIDÆ, n. fam.

Hexactiniæ, in which the tentacles have degenerated into sphæridia.

Phialactis, n. g., for *P. neglecta*, n. sp., Papiete; goblet-shaped, sphæridia on the inside of the cup only; a series of tongue-like ridges within the stomatodæum; 23 pairs of mesenteries; new ones arise just under the oral disc; muscle of body-wall endodermal and circular, no sphincter; FOWLER (2).

PHELLIDÆ.

Phellia spinifera, n. sp., off Patagonia and S. Atlantic; HERTWIG, p. 24, pl. ii, figs. 8 & 9.

AMPHIANTHIDÆ.

Amphianthus ornatum, n. sp., off Bermuda, 1075 fath., and N. Pacific, 1300 and 2900 fath.; HERTWIG, p. 26, pl. i, fig. 8.

ILYANTHIDÆ.

Halcampa kerguelensis, n. sp., Kerguelen I. ; HERTWIG, p. 28, pl. ii, fig. 5.

Halcampella mazima, n. sp., Philippines ; *id.* p. 29.

INCERTÆ SEDIS.

Myriactis, n. g. : endodermal muscles slight, strong mesenteric retractor ; tentacles numerous, long, subequal, polycyclic ; marginal row papilliform ; mesenteries numerous, complete, all with reproductive organs ; wall smooth below, with suckers above ; for *M. tubicola*, n. sp., Mergui Archipelago ; HADDON, p. 248, pl. xix.

Polyparium is derived from an ordinary bilateral Anthozoan ; in, e.g., a young *Halcampa* the aboral end becomes a broad basal disc, the tentacular wreath multiple, the breadth increases, mouth and œsophagus disappear, and the tentacles shorten and are perforated ; finally, suckers appear on the base ; HAACKE (1). *P. ambulans*, general sketch of ; BERNARD, PERRIER.

ÆGIREÆ, n. tribe.

Actiniaria "with a perfect body-cavity (cœlome) and a developed digestive apparatus, consisting of œsophagus, intestine, and anus," for:—

ÆGIRIDÆ, n. fam.

"*Ægireæ*, whose body is cylindrical, vermiform ; 12 single septa, with the cœlome divided into 12 longitudinal chambers," for:—

Ægir, n. g. : "The body elongate, cylindrical, with a mucous vaginal covering and 12 longitudinal ribs, between which small suckers are scattered. One cycle consisting of a few tentacles. In the posterior part of the intestinal canal (rectum), immediately above the anus, 12 slender fissures communicating directly with the intestinal passage. 12 equally situated perfect septa. Endodermal circular muscles. Hermaphrodite ;" for *Æ. frigidus*, n. sp., N. Atlantic ; DANIELSSEN, p. 12, pls. ii, figs. 1, 5-11, & iii.

Fenja, n. g. : "The body cylindrical, elongate, furnished with 12 longitudinal grooves, between which 12 longitudinal areas covered with suckers. A series of a few retractile tentacles. Anus. 12 perfect septa. 12 longitudinal muscles, between which strongly prominent transversal muscles. 12 genital pores around the anus, outside the rectum. Mesodermal circular muscles. Hermaphrodite ;" for *F. mirabilis*, n. sp., N. Atlantic ; *id.* p. 3, pls. i, figs. 1-14, & ii, figs. 2-4.

PARACTINLÆ.

SICYONIDÆ.

Sicyonis elongata, n. sp., N. Pacific, 2900 fath. ; HERTWIG, p. 33.

EDWARDSIÆ.

EDWARDSIÆ.

Edwardsia lucifuga, n. sp., Cotes-du-Nord ; FISCHER (1).

ZOANTHÆ.

ZOANTHIDÆ.

Episoanthus thalamophilus, off Valparaiso, 2160 fath., p. 37, pls. i, fig. 3, & iv, figs. 7 & 8 ; *E. stellaris*, Philippines, p. 39, pl. i, fig. 4 ; *E. elongatus*, off Monte Video, p. 41, pl. i, fig. 2, n. spp. ; HERTWIG.

Sphenopus pedunculatus, n. sp., Philippines ; *id.* p. 49, pl. i, fig. 11.

Stephanidium, n. g., for *S. schulzii*, n. sp., Philippines ; HERTWIG, p. 52, pls. i, fig. 14, & iii, figs. 1 & 7.

THAUMACTINÆ, n. tribe.

Thaumactis, n. g., for *T. medusoides*, n. sp., Papiete ; probably free, biconvex in form, 14 true tentacles round the stomatodæum, also pseudotentacles (hollow evaginations of the cœlenteron) ; no siphonoglyphe ; musculature slightly developed, radial ectodermal ; 21 pairs of mesenteries, one pair directive ; FOWLER (2).

ALCYONARIA.

ALCYONACEA.

CORNULARIDÆ.

Rhizozenia alba, n. sp., N. Atlantic ; GRIEG, (2) p. 1, pl. i, figs. 1-34.

Synpodium margaritaceum, n. sp., N. Atlantic ; *id.* & c. p. 8, pl. i, figs. 35-43, pl. ii.

FASCICULARINÆ, n. subfam.

Fascicularia, n. g. : polyps situated independently upon the basal portion, which alone is furnished with spicules ; for *F. radicans*, n. sp., Algiers ; VIGUIER. *F. radicans*, C. Vig., = *Paralcyonium edwardsii*, Lac.-Duth. ; LACAZE-DUTHIERS (1).

ALCYONIDÆ.

Lobophytum madreporeoides, n. sp., Mergui Archipelago ; RIDLEY, p. 225, pl. xvii, figs. 7-11.

8. FIEDLER, KARL. Ueber Ei- und Samenbildung bei *Spongilla fluvialis*. Z. wiss. Zool. xlvii, i, pp. 85-128, pls. xi & xii.

The author opposes Gütte & Lendenfeld as to the formation of the egg follicle and ovum. A general discussion of spermatogenesis is appended.

9. FRISTEDT, K. Bidrag till Kännedomen om de vid Sveriges vestra kust lefvande *Spongiæ*. Sv. Ak. Handl. n.f. 21 Bd., Heft i, 6, pp. 1-56, pls. i-iv.

Description of 2 new genera, 7 new species, and 1 new variety.

10. HINDE, G. J. On some New Species of *Uruguaya*, Carter, with Remarks on the Genus. Ann. N. H. (6) ii, July, 1888, pp. 1-12, pl. iv.

Describes the following new species:—*Uruguaya repens*, *U. macandrewi* (closely allied to *U. coralloides*, Bowerbk.), *U. pygmaea*. The author discusses the advisability of removing the forms included in the genus *Uruguaya* to *Meyenia*, Carter, on the ground of gemmules being present in the above-named new species.

11. —. Notes on Sponges from the Quebec Group at Métis and from the Utica Shale. Can. Rec. iii, 2, pp. 59-68.

A more detailed account of the species described by Dawson (*vide* No. 4).

12. GEINITZ, E. *Receptaculitidæ* und andere Spongien der mecklenburgischen Silurgescheibe. Z. geol. Ges. xl, 1, pp. 17-23, 5 woodcuts.

Genus *Ischadites* is to be joined with *Receptaculites*.

13. KATZER, F. Spongienschichten in mittelböhmischem Devon (Hercyn). SB. Ak. Wien, 97 Bd., 1 Abth. pp. 300-310, 1 pl.

Acanthospongia bohémica, Katzer, n. sp.

14. LENDENFELD, R. v. F. E. Schultze's 'Challenger' Report über die Hexactinelliden. Biol. Centralbl. viii Bd., No. 2, pp. 46-53.

Contains a brief criticism on the English translation of the original.

15. MACMUNN, C. A. On the Chromatology of some British Sponges. J. Physiol. ix, pp. 1-25, pl. i.

Chlorophyll is present in Sponges, and is built up synthetically by them. The function of the chlorophyll is probably to remove waste CO₂, and then, by the influence of light rays, build up from CO₂ and H₂O substances such as starch, glycogen, sugar, or fat.

16. MILLS, H. A new Fresh-water Sponge (*Heteromeyenia radiospiculata*, n. sp.). Ann. N. H. (6) i, No. 4, pp. 313 & 314.

17. NOLL, F. C. Beiträge zur Naturgeschichte der Kieselschwämme. i. *Desmacidon boscii*, Noll, mit Hinweisen auf *Craniella carnosa*, Rüppell, und *Spongilla fragilis*, Leidy. Abh. Senck. Ges. xv, 2, pp. 5-58, pls. i-iii.

Diagnosis of *D. boscii*, n. sp., with notes on development. Account of spicule formation. *Anonyx spongivivus*, n. sp., a parasitic Amphipod, infests the Sponge.

18. *POLEJAEFF, N. Versuch eines natürlicher Systems der bekannten Spongien. St. Petersburg: 1885.
19. POTTS, E. Biology of Fresh-water Sponges. Am. Micr. J. ix, 3, pp. 43-46, and 4, pp. 74-77.
Reprint of the introduction to monograph in P. Ac. Philad. ii, 1887.
20. PRIEST, B. W. On some remarkable Spicules from the Oamaru Deposit. J. Quek. Club (2), iii, 22, July, 1888, pp. 254-256, pl. xix.
21. SCHMIDT, —. Sponge Fisheries. Method of artificial propagation at Gratz. Nature, xxxvii, p. 595.
22. SOLLAS, W. J. Report on the *Tetractinellida* collected by H.M.S. 'Challenger,' during the years 1873-76. Challenger Reports, xxv, clxvi & 458 pp., 44 pla., and 1 map.
Contains description of all known species; 33 new genera and 73 new species are defined. An appendix on the *Monaxonida* is added, with diagnoses of 2 new genera and 5 new species.
23. —. A contribution to the History of Flinta. Sci. P. R. Dubl. Soc. vi, pt. i, pp. 1-5.
24. TOPSENT, E. Sur les gemmules de quelques Silicisponges marines. C.R. cvi, No. 18, pp. 1298-1300.
The author describes gemmules found in *Chalina oculata*, *C. gracilentia*, *Cliona vastifica*, and *Suberites ficus*. Extract in Rev. Sci. xli, No. 19, pp. 603 & 604, and in Ann. N. H. (6) i, pp. 457 & 458.
25. —. Notes Spongologiques. Arch. Z. expér. (2) vi, 3, pp. xxxiii-xliii.
Amended definition of genus *Dendroryx*, Gray. Description of *D. luciensis*, n. sp. The larval condition of *Spongelia (Dysideu) fragilis* exactly resembles that of *S. pallescens*.
26. —. Étude de la Faune des Spongiaires de Luc (3rd list). Bull. Soc. L. Norm. pp. 330-335.
27. —. Notes de Spongologie. T. c. pp. 34-41.
28. —. Contribution à l'étude de la distribution des Éponges de la Manche. T. c. pp. 71-73.
29. * —. Contribution à l'étude des Clionides. Paris: 1888.
30. Tunisia, Sponge Fishery at. Report of Consul. Nature, xxxviii, p. 349.
31. WELTNER, M. Ueber das Fortleben von Spongillen nach der Ausbildung von Schwärmlarven. SB. nat. Fr. 1888, No. 2, pp. 18-22.
32. —. On the survival of *Spongillæ* after the development of Swarm-larvæ. Ann. N. H. (6) i, 1888, pp. 340-343.
The author opposes Lieberkühn, Metschnikoff, and Gütte on various points.

33. WIERZEJSKI, A. Beitrag zur Kenntniss der Süßwasserschwämme.
Verh. z.-b. Wien, 1888, pp. 529-536, pl. xii.

Pott's *Spongilla novæ-terræ* appears to be an abnormal *Meyenia* (*Ephydatia*) *mülleri*, Lieberk. Other cases of abnormality in *Meyenia* and *Euspongilla*, and of variation in gemmules, are described. Other authors have described these as new species or varieties.

II.—SUBJECT-INDEX

TO LIST OF PUBLICATIONS.

DISTRIBUTION.

Plymouth Sound, BOURNE.	Indo-Pacific region, SOLLAS (22).
Arctic region, SOLLAS (22).	S. Australian region, <i>id. t. c.</i>
Lusitanian region, <i>id. t. c.</i>	Kerguelian region, <i>id. t. c.</i>
Caribbean region, <i>id. t. c.</i>	Sweden, FRISTEDT.
Brazilian region, <i>id. t. c.</i>	Tunis (30).
Magellanic region, <i>id. t. c.</i>	English Channel, TOPSENT (28).
Patagonian region, <i>id. t. c.</i>	Ohio river, MILLS.
S. African region, <i>id. t. c.</i>	

MORPHOLOGY.

GENERAL ANATOMY (*v. sub.*).

HINDE (10, 11), DAWSON, DUNIKOWSKI, DENDY (5, 6), NOLL,
WIERZEJSKI, MILLS, SOLLAS (22), TOPSENT (25).

SPICULES, &c.

NOLL, PRIEST, SOLLAS (22).

CHOANOCYTES.

SOLLAS (22), DENDY (6), BIDDER.

EMBRYOLOGY.

FIEDLER, TOPSENT (24, 25), SOLLAS (22), WELTNER (31, 32), NOLL,
DENDY (6).

PHYSIOLOGY (*v. sub.*).

BIDDER, MACMUNN.

FOSSIL FORMS (*v. sub.*).

GEINITZ, KATZER, DUNIKOWSKI, DAWSON, HINDE (10, 11).

MISCELLANEA.

PARASITISM—NOLL.

ABNORMALITY—WIERZEJSKI.

III.—CLASSIFICATION.

SOLLAS (22) gives the following classification :—

- Subkingdom. PARAZOA.
- Phylum SPONGIÆ.
- Class I. MEGAMASTICTORA.
 - Subclass. CALCAREA.
- Class II. MICROMASTICTORA.
 - Subclass 1. MYXOSPONGIÆ.
 - Subclass 2. HEXACTINELLIDÆ.
 - Subclass 3. DEMOSPONGIÆ.
 - Tribe A. MONAXONIDA.
 - Order I. MONAXONA.
 - Order I. CERATOSA.
 - Tribe B. TETRACTINELLIDA.
 - Order I. CHORISTIDA.
 - Suborder 1. SIGMATOPHORA.
 - Family i. Tetillidæ.
 - Family ii. Samidæ.
 - Suborder 2. ASTROPHORA.
 - Demus A. Streptastrosa, n. n.
 - Family i. Theneidæ.
 - Family ii. Pachastrellidæ.
 - Demus B. Euastrosa.
 - Family i. Stelettidæ.
 - Appendix. Epipolasidæ ?.
 - Demus C. Sterrastrosa.
 - Family i. Geodiidæ.
 - Family ii. Placospongidæ.
 - Suborder 3. MICROSCLEOPHORA.
 - Family i. Placinidæ.
 - Family ii. Corticidæ.
 - Family iii. Thrombidæ.
 - Order II. LITHISTIDA (O. Schmidt).
 - Suborder 1. HOPLOPHORA.
 - Demus A. Triænosa.
 - Family i. Tetracladidæ (Tetracladina, Zittel).
 - Family ii. Corallistidæ (Rhizomorina, Zittel).
 - Family iii. Pleromidæ (Megamorina, Zittel).
 - Demus B. Rhabdosa.
 - Family i. Neopeltidæ.
 - Family ii. Scleritodermidæ.
 - Family iii. Cladopeltidæ.
 - Suborder 2. ANOPLIA.
 - Family i. Azoricidæ (Rhizomorina, Zittel).
 - Family ii. Anomocladidæ (Anomocladina, Zittel).

6 *Spong.*

SPONGIÆ.

In the Appendix is given the following arrangement of the *Monaxonida* :—

Order. MONAXONIDA.

Suborder 1. *ASEMOPHORA*.

Family i. *Homoraphidæ*.

Suborder 2. *MENISCOPHORA*.

Family i. *Heteroraphidæ*.

Family ii. *Desmacidonidæ*.

Suborder 3. *SPINTHAREOPHORA*.

A. *Homosclera*.

Family i. *Astropeplidæ*.

B. *Heterosclera*.

Demus 1. *Centrospinthara*.

Family i. *Azinellidæ*.

Family ii. *Dorypleridæ*.

Family iii. *Tethyidæ*.

Demus 2. *Spiraspinthara*.

Family i. *Scolopidæ*.

Family ii. *Suberitidæ*.

Family iii. *Spirastrellidæ*.

IV.—SYSTEMATIC.

HEXACTINELLIDA.

Protospongia tetranema, n. sp., HINDE (11), DAWSON (4).

Hyalostelia metissica, n. sp., HINDE (11), DAWSON (4).

Cyathophycus quebecensis, n. sp., HINDE (11), DAWSON (4).

Ischadites to be united with *Receptaculites*, GEINITZ.

DEMOSPONGIÆ.

MONAXONIDA.

Uruguaya repens, n. sp., HINDE (10).

Uruguaya macandrewi, n. sp., *id.*

Uruguaya pygmæa, n. sp., *id.*

Meyenia to include forms under *Uruguaya*; *id.*

Astropeplus, n. g., *A. pulcher*, n. sp.; SOLLAS (22).

Desmacidon borei, n. sp., NOLL.

Stylopus, n. g., *S. coriaceus*, n. sp., FRISTEDT.

Desmacella pumicea, n. sp., *id.*

Desmacella peachii, var. *stellifera*, n. var., *id.*

Hastatus mamillaris, n. sp., *id.*

Hastatus fragilis, n. sp., *id.*

Esperia foliata, n. sp., *id.*

Chalina pulcherrima, n. sp., *id.*

Vosmeria, n. g., *V. crustacea*, n. sp.; *id.*

Riddleia, n. g., *R. oriformis*, n. sp.; DENDY (5).

Dendrorhynchus: amended genus; TOPSENT (25).

Dendrorhynchus luciensis, n. sp., *id.* Other species to be included in amended genus are:—*Halichondria incrustans*, *H. irregularis*, *dickiei*, *pattersoni*, *robertsoni*, *scandens*, *nigricans*, *ingalli*, *pulchella*, *albula*, *thompsoni*, *candidula*, *isodactylus*, *hyndmanni*, *fimbriata*, *lurida*, *tumulosa*, *rugosa*; *Hymeniacidon dujardinii*, *armatura*.

Heteromeyenia radiospiculata, n. sp., MILLS.

Acanthospongia bohémica, n. sp., KATZER.

Epallax callocyathus, n. sp., SOLLAS (22).

Dorypleures, n. g., *D. dendyi*, n. sp., *id.*

Tethya japonica, n. sp., *id.*

Scolopos moseleyi, n. sp., *id.*

Pemmatites, n. g., *P. verrucosus*, n. sp., *P. articus*, n. sp., *P. macroporus*, n. var., *P. latitube*, n. var.; DUNIKOWSKI.

TETRACTINELLIDA.

Tetilla sandalina, n. sp., SOLLAS (22).

Tetilla grandis, n. sp., *id.*

Tetilla grandis, var. *alba*, n. var., *id.*

Tetilla coronata, n. sp., *id.*

Tetilla ridleyi, n. n. (*dactyloidea*, Ridley), *id.*

Chrotella, n. g., *id.*

Chrotella simplex, n. sp., *id.*

Chrotella macellata, n. sp., *id.*

Cinachyra, n. g., *id.*

Cinachyra barbata, n. sp., *id.*

Craniella carteri, n. sp., *id.*

Craniella pulchra, n. sp., *id.*

Craniella schmidtii, n. sp., *id.*

Thenea delicata, n. sp., *id.*

Thenea wrightii, n. sp., *id.*

Thenea grayi, n. sp., *id.*

Thenea schmidtii, n. sp., *id.*

Thenea wyvillii, n. sp., *id.*

Thenea media, n. sp., *id.*

Thenea, sp. ? (2), *id.*

Pæcillastra, n. n. (*Normania*, Bowbk.), *id.*

Pæcillastra schulzii, n. sp., *id.*

Pæcillastra crassiuscula, n. sp., *id.*

Pæcillastra laminaris, n. sp., *id.*

Pæcillastra tenuilaminaris, n. sp., *id.*

Sphinctrella cribrifera, n. sp., *id.*

Sphinctrella gracilis, n. sp., *id.*

Sphinctrella ornatus, n. sp., *id.*

Charucella, n. g., *id.*

Charucella aspera, n. sp., *id.*

- Characella agassizi*, n. sp., *id.*
Stæba, n. g., *id.*
Stæba simplex (Carter), *id.*
Triptolemus, n. g., *id.*
Triptolemus cladosus, n. sp., *id.*
Triptolemus intextus, n. sp., *id.*
Nethea, n. g., *id.*
Nethea nana (Carter), *id.*
Calthropella, n. g., *id.*
Calthropella simplex, n. sp., *id.*
Myriastræ subtilis, n. sp., *id.*
Myriastræ simplicifurca, n. sp., *id.*
Myriastræ clavosa, var. *quadrata*, n. var., *id.*
Myriastræ toxodonta, n. sp., *id.*
Pilochrota, n. g., *id.*
Pilochrota hæckeli, n. sp., *id.*
Pilochrota pachydermata, n. sp., *id.*
Pilochrota gigas, n. sp., *id.*
Pilochrota tenuispicula, n. sp., *id.*
Pilochrota crassispicula, n. sp., *id.*
Pilochrota purpurea, var. *longancora*, n. var., *id.*
Pilochrota anancora, n. sp., *id.*
Pilochrota moseleyi, n. sp., *id.*
Pilochrota lendenfeldi, n. sp., *id.*
Astellæ, n. g., *id.*
Astellæ vosmaeri, n. sp., *id.*
Dragmastra, n. g.
Dragmastra normani, n. sp., *id.*
Anthastra, n. g., *id.*
Anthastra pulchra, n. sp., *id.*
Anthastra communis, n. sp., *id.*
Anthastra parvispicula, n. sp., *id.*
Anthastra pyriformis, n. sp., *id.*
Anthastra ridleyi, n. sp., *id.*
Aurora, n. g., *id.*
Aurora (Stelletta) globostellata, *id.*
Aurora (Stelletta) reticulata, *id.*
Stelletta phrissens, n. sp., *id.*
Disyringa, n. g., *id.*
Disyringa dissimilis (Ridley), *id.*
Stryphnus, n. g., *id.*
Stryphnus niger, n. sp., *id.*
Stryphnus rudis, n. sp., *id.*
Stryphnus unguiculus, n. sp., *id.*
Psammastra, n. g., *id.*
Psammastra murrayi, n. sp., *id.*
Ecionema nigrum, n. sp., *id.*
Ecionema rotundum, n. n. (*E. acerrus*, Ridley), *id.*
Amphius, n. g., *id.*

- Amphius huxleyi*, n. sp., *id.*
Algol, n. g., *id.*
Algol corticata (*Stellettinopsis corticata*, Carter), *id.*
Asteropus, n. g.
Asteropus simplex (*Stellettinopsis simplex*, Carter), *id.*
Asteropus annulatus (*Stellettinopsis annulata*, Schmidt), *id.*
Coppatias, n. g.
Coppatias coriaceus (*Stellettinopsis coriacea*, Carter), *id.*
Coppatias tuberculatus (*Stellettinopsis tuberculata*, Carter), *id.*
Coppatias purpureus (*Stellettinopsis purpurea*, Carter), *id.*
Coppatias luteus (*Stellettinopsis lutea*, Carter), *id.*
Coppatias stellifera (*Amorphina stellifera*, Carter, *Stellettinopsis stellifera*, Ridley), *id.*
Coppatias carteri (*Stellettinopsis carteri*, Ridley), *id.*
Erylus formosus, n. sp., *id.*
Erylus carteri, n. sp., *id.*
Erylus lendenfeldi, n. sp., *id.*
Cuminus sphæroconia, n. sp., *id.*
Pachymatisma normani, n. sp., *id.*
Cydonium hirsutus, n. sp., *id.*
Cydonium magellani, n. sp., *id.*
Cydonium glariosus, n. sp., *id.*
Cydonium eosaster, n. sp., *id.*
Cydonium cooksoni, n. sp., *id.*
Cydonium berryi, n. sp., *id.*
Cydonium japonicum, n. sp., *id.*
Cydonium pleiades, n. sp., *id.*
Cydonium normani, n. sp., *id.*
Isops, n. g., *id.*
Isops pachydermata, n. sp., *id.*
Plucospongia intermedia, n. sp., *id.*
Antares, n. g., *id.*
Antares (*Stellettinopsis*) *euastrum*, Schmidt, *id.*
Thrombus, n. g., *id.*
Thrombus challenger, n. sp., *id.*
Thrombus (*Corticium*) *abyssi*, Carter, *id.*
Thrombus ornatus, n. sp., *id.*
Thrombus (*Corticium*) *kittoni*, Carter, *id.*
Culcabrina, n. g., *id.*
Culcabrina (*Corticium*) *plicatum*, Schmidt, *id.*
Corticella, n. g., *id.*
Corticella (*Corticium*) *stelligera*, Schmidt, *id.*
Rhachella, n. g., *id.*
Rhachella (*Samus*) *complicata*, Carter, *id.*

LITRISTIDA.

- Discodermia discifurca*, n. sp., *id.*
Discodermia panopla, n. sp., *id.*

10 Spong.

SPONGIÆ.

Discodermia ornata, n. sp., id.

Neosiphonia, n. g., id.

Neosiphonia superstes, n. sp., id.

Corallistes thomasi, n. sp., id.

Callipelta, n. g., id.

Callipelta ornata, n. sp., id.

Dædalopelta, n. g., id.

Dædalopelta nodosa, Schmidt (*Discodermia clavatella*, var. *nodosa*, Schmidt).

Pleroma, n. g., id.

Pleroma turbinatum, n. sp., id.

Scleritoderma flabelliformis, n. sp., id.

Siphonidium capitatum, n. sp., id.

Sympyla, n. g., id.

Sympyla (Azorica) cribriphora, Schmidt, id.

Azorica marginata, n. sp., id.

Azorica crassiuscula, n. sp., id.

Tretolophus, n. g., id.

Tretolophus paniceus, n. sp., id.

PROTOZOA.

BY

CECIL WARBURTON, B.A.

I.—LIST OF PUBLICATIONS.*

- AGASSIZ, A. (1) Review of Dr. Chun's observations on Pelagic Animals at great depths. *Am. J. Sci.* xxxv (1888), pp. 420-424. [Abstr. in *J. R. Micr. Soc.* 1888, p. 558.]
- . (2) Deep sea fauna, in "The Cruises of the 'Blake.'" *Bull. Mus. C. Z.* xiv, p. 153.
Pelagic fauna on p. 171.
- . (3) Characteristic deep sea types of *Rhizopoda* in "The Cruises of the 'Blake.'" *Op. cit.* xv, p. 157, figs. 484-519.
- ANDERSON, H. H. Note on a Species of *Anoplophrya*. *Sci. Goss.* 1888, p. 38.
- BALBIANI, G. Evolution des micro-organismes animaux et végétaux parasites. (Suite.) *J. Microgr.* xii.
- BARROIS, TH. Matériaux pour servir à l'étude de la Faune des eaux douces des Açores. II & III (*Rotifera* and *Protozoa*). Lille: 1888, 8vo (12 pp.).
- BEDDARD, F. E. (1) Note on a new Gregarine. *P. Z. S.* 1888, pp. 355-358, 1 fig. [See *J. R. Micr. Soc.* 1888, p. 977.]
- . (2) Remarks on a Species of *Coccidium* infesting *Perichæta*. *Ann. N. H.* ii, pp. 433-439, 1 pl.
- BLANC, H. La *Gromia brunnerii*, un nouveau Foraminifère. *Rec. Z. Suisse*, iv, No. 4, pp. 497-513, 1 pl. [Abstr. in *J. R. Micr. Soc.* 1888, p. 598; also in *Ann. Micrograph.* p. 132.]
- BLANCHARD, R. (1) Remarques sur le *Mégastome intestinal* (*Lambia intestinalis*, nom. nov.). *Bull. Soc. Z. Fr.* xiii, P. 1, pp. 18 & 19.
- . (2) Article, "Hématozoaires" in *Diction. encycl. Sc. médic.* pp. 43-73. [Abstr. by M. BRAUN in *CB. Bakt. Parasit.* 1 Jahrg., 2 Bd., No. 21, pp. 628 & 629.]

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the journal or work referred to.

- [BLANCHARD, R.] (3) Note préliminaire sur *Monas dunali*, flagellé qui cause la rubéfaction des marais salants. Bull. Soc. Z. Fr. xiii, No. 6, pp. 153 & 154.
- BLOCHMANN, F. Translation of his paper on "Contributions to the knowledge of the reproduction of *Euglypha alveolata*," in the Morph. JB. 1887. Ann. N. H. (6) i, pp. 27-36. [See Zool. Rec. xxiv, *Prot.* 6.]
- BOLIVAR, J. *Vorticella* parasitisch an den Kiemen von *Astacus fluviatilis*. An. Soc. Esp. xvii, Cuad. 2, pp. 60-63.
- BOVIER-LAPIERRE, —. Nouvelles Observations sur les Peridinéens appartenants au Genre *Polykrikos*. C.R. Soc. Biol. v, p. 579.
- BRADY, H. B. (1) On some *Foraminifera* from the Abrolhos Bank. Tr. Z. S. xii, pp. 211-239, 8 pls.
124 species, 4 new species.
- . (2) Note on the so-called "Soapstone" of Fiji. Q. J. Geol. Soc. 1888, Febr., 10 pp., 1 pl.; also Nature, xxxvii, p. 142.
- . (3) Note on the Reproductive Condition of *Orbitolites complanata* var. *laciniata*. J. R. Micr. Soc. 1888, pp. 693-697, 1 pl.
- . (4) Note on some Silurian *Lagenæ*. Geol. Mag. v, pp. 481-484, 1 pl.
- DE BRUYNE, C. (1) Ueber eine neue Monadine, *Endobiella bambekii*. CB. Bakt. Parasit. iv (1888), pp. 1-5, 1 pl. [Abstr. in J. R. Micr. Soc. 1888, p. 972.]
- . (2) Contribution à l'étude de la vacuole pulsatile. Bull. Ac. Belg. (3) xv, No. 5, pp. 718-749, 1 pl. [Abstr. in J. R. Micr. Soc. 1888, p. 749, and in Ann. Micrograph. i, p. 80.]
- BURROWS, H. W., SHERBORN, —, DAVIES, C., and BAILEY, G. The *Foraminifera* of the Red Chalk. J. R. Micr. Soc. iii, pp. 383-385.
- BÜTSCHLI, O. *Protozoa*. (Bronn's Klassen u. Ordn. d. Thierreichs) Leipzig & Heidelberg: 1888, 8vo. [See Zool. Rec. xxiv, *Prot.* 12, and J. R. Micr. Soc. 1888, pp. 597 & 967.]
- °CARTER, FRED. B. *Rhizopoda*: their life-history and classification. Am. Micr. J. ix, No. 1, pp. 3-10.
- CARTER, H. J. (1) On two new genera allied to *Loftusia*, 12 pp., 1 pl. Ann. N. H. 1888, p. 172.
- . (2) On the Organic and Inorganic Changes of *Parkeria*. *Op. cit.* ii (1888), pp. 45-55, 1 pl. [See J. R. Micr. Soc. 1888, p. 757.]
- . (3) On the nature of the Opaque Scarlet Spherules found in the Chambers and Canals of many fossilized *Foraminifera*. Ann. N. H. (6) i, No. 4, pp. 264-270. [Abstr. in J. R. Micr. Soc. 1888, iii, p. 438.]
- . (4) Description of a large variety of *Orbitolites mantelli*, Cart., from the west bank of the Irrawadi. Ann. N. H. ii, pp. 342-348.

- CATTANEO, G. (1) Su di un Infusorio ciliato, parassito del sangue del *Curcinus mænas* (*Anophrys maggii*, n. sp.). Boll. scient. x, No. 1, pp. 11-15. [See Zool. Anz. 1888, p. 456; Ann. Micrograph. i, p. 131; J. R. Micr. Soc. 1888, p. 972; Ann. N. H. 1888, ii, p. 427.]
- (2) Note Sui Protozoi Lacustri. Boll. scient. x, pp. 90-100.
- CHUN, C. Pelagic Animals at Great Depths, and their Relations to the Surface Fauna. Bibliotheca Zoologica, i. Cassel: 1888, 4to, pp. 1-66, 5 pls. [Abstr. in J. R. Micr. Soc. 1888, p. 558.]
- CLARK, J. Ueber die Einfluss niederer Sauerstoffpressungen auf die Bewegungen des Protoplasmas. Ber. deut. bot. Ges. vi, pp. 273-280. [Abstr. in J. R. Micr. Soc. 1888, p. 971.]
- CROOKSHANK, E. M. Abstract (German) of his Paper on Flagellated Protozoa in the Blood of Animala. CB. Bakt. Parasit, 1 Jahrg., 2 Bd., p. 127.
- DADAY, E. v. (1) Monographie der Familie der Tintinnodeen. MT. z. Stat. Neap. vii, pp. 473-591, 4 pls. [Abstr. in J. R. Micr. Soc. 1888, p. 436.]
29 new species.
- (2) Systematische Uebersicht der Dinoflagellaten des Golfes von Neapel, mit Beschreibung einer frei-schwimmenden Acinete und einer neuen *Cercaria*-Form aus demselben Golfe. Budapesth: 1888, 8vo, 24 pp., 1 pl.
- (3) Organische Verhältnisse der Tintinnodeen. Budapesth: 1888, 8vo, 54 pp., 2 col. pla. (Hungarian).
- (4) Egy szabadon úszó *Acineta* a nápolyi öbölből. Term. fuzetek, xi, No. 2, pp. 82 & 83, 1 fig.
- *DANGEARD, P. A. The *Cryptomonada*. Bull. Soc. Bot. Fr. xxxv (1888), pp. 127-130.
- DAWSON, [SIR] J. W. *Eozoon canadense*. Geol. Mag. v, 1888, pp. 49-54, 1 pl. [Abstr. in J. R. Micr. Soc. 1888, ii, p. 241.]
- DEECKE, W. Die Foraminiferenfauna im Aptien von Carniol (Basses Alpes). MT. Vorpomm., 19 Jahrg., pp. 40-44.
- DREYER, F. Die Pylombildungen und entwicklungsgeschichtlicher Beziehung bei Radiolarien und bei Protisten überhaupt. Jen. Z. Nat. xxiii, pp. 77-214, 6 pls.
- ENTZ, G. (1) Ueber eine *Nyctotherus*-Art im Blute von *Apus cancri-formis*. Zool. Anz. xi (1888), pp. 618-620.
- (2) Tanulmányok a véglények Köréből. Studien über Protisten. (Hungarian and German.) Aladár Rózsabegy. Budapesth: 1888, 4to.
- FABRE-DOMERGUE. (1) Note sur la Famille des Urcéolaires (Infusoires ciliés péritriches). C.R. Soc. Biol. v, pp. 238-241.

[FABRE-DOMERGUE.] (2) Sur la Nature de certaines substances de Réserve Contenues dans le Protoplasma des Infusoires. *Ann. Micrograph.* 1888, pp. 24-30, 7 figs.

— (3) Recherches anatomiques et physiologiques sur les Infusoires Ciliés. *Ann. Sci. Nat.* (7) v, Nos. 1 & 2, Art. 1, p. 1, Nos. 3 & 4, p. 129, 5 pls. [Abstr. in *J. R. Micr. Soc.* 1888, p. 751.]

— (4) Sur l'organisation des Urceolaires. *J. Anat. Phys.* xxiii, p. 214.

*FRANKHAUSER, J. On *Euglena*. *MT. Ges. Bern.* 1888, p. xxiii.

GARCIN, A. S. *Euglena*. *Morot's Journ. de Bot.* ii (1888), pp. 241-246. [Abstr. in *J. R. Micr. Soc.* 1888, p. 972.]

GIARD, A. Sur les genres *Folliculina* et *Pébrilla*. *Bull. Sci. Nord.* (3) 1888, pp. 310-317, 1 pl. [See *Ann. Micrograph.* i, p. 130.]

GOURRET & RÆSER. (1) Contribution à l'étude des Protozoaires de la Corse. *Arch. Biol.* viii, Fasc. 1, pp. 139-204, 3 pls. [Abstr. in *J. R. Micr. Soc.* 1888, p. 755.]

— (2) Description de deux Infusoires du Port de Bastia. *J. Anat. Phys.* xxiii (1888), p. 656.

*GRASSI, B. Morfologia e sistematica di alcuni protozoi parassiti. *Atti Acc. Pontif. Lincei*, 1888, 4to, Rendiconti, iv, Fasc. 1, pp. 5-12. [Abstr. in *J. R. Micr. Soc.* 1888, p. 975.]

GRASSI, B., & SCHEWIAKOFF, W. Beitrag zur Kenntniss des *Megastoma entericum*. *Z. wiss. Zool.* xlv, pp. 143-154, 1 pl. [Abstr. in *J. R. Micr. Soc.* 1888, p. 599, and in *Ann. Micrograph.* i, p. 80.]

*GREEF, R. Studien über Protozoen. *SB. Ges. Marb.* 1888, No. 3, pp. 90-158.

Pp. 90-124, land *Rhizopoda*; pp. 125-135, land *Infusoria*; pp. 135-158, fresh-water *Rhizopoda*.

GREENWOOD, [MISS] M. Digestion in *Rhizopoda*. *J. Physiol.* viii, 1887, pp. 263 & 287. [Abstr. in *J. R. Micr. Soc.* 1888, ii, p. 240; extr. in *Rev. Sci.* (3) xli, No. 3, p. 93.]

GRUBER, AUG. (1) Weiterer Beobachtungen an viel-kernigen Infusorien. *Ber. Freiburg Ges.* iii (1888), pp. 57-71, 2 pls. [Abstr. in *Biol. Centralbl.* viii, pp. 178 & 179, and in *J. R. Micr. Soc.* 1888, pp. 597 & 750.]

— (2) Ueber einige *Rhizopoden* aus dem Genueser Hafen. (12 pp., 1 pl.). *Mohr, Freiburg*: 1888, 8vo. [Abstr. in *Ber. Freiburg Ges.* iv, pp. 34 & 44; also in *J. R. Micr. Soc.* 1888, p. 757.]

— (3) Enumerazione dei Protozoi raccolti nel porto di Genova. *Ann. Mus. Genov.* (2) v, pp. 535-553.

DE GUERNE, J. Sur la Dissémination des Organismes d'eau douce par les Palmipèdes. *C.R. Ass. Fr. Sci.* 1888, p. 339.

Reference to *Rhizopoda*.

- GULLIVER, G. Note on the Minute Structure of *Pelomyza palustris*.
 ■ J. R. Micr. Soc. 1888, pp. 11 & 12.
- HARVEY, F. L. Contribution to the Fresh-water Rhizopods. Am. Nat.
 ■ xxii, Jan., pp. 71-74.
- HÆCKEL, E. Die Radiolarien. Eine Monographie. 3 und 4 Theil.
 ■ Die *Acantharia* und *Phaeodaria*. Berlin (G. Reimer): 1888, with 12
 ■ and 30 pls. respectively of 'Challenger' *Radiolaria*.
- HEAPE, W. Preliminary Report upon the Fauna and Flora of Plymouth
 ■ Sound. J. Marine Biol. Ass. No. ii (Aug., 1888), *Protozoa*,
 ■ pp. 163 & 164.
- HENNEGUY, F. (1) Contribution à l'étude des Sarcosporidies. Note sur
 ■ un parasite des muscles du *Palæmon rectirostris*. Mém. Soc. Philom.
 ■ (Paris) pp. 163-171, figs.
 ■ —. (2) Influence de la Lumière sur la Phosphorescence des Nocti-
 ■ lueues. C.R. Soc. Biol. v (1888), p. 707.
- HOWCHIN, [REV.] W. Additions to the Knowledge of the Carboniferous
 ■ *Foraminifera*. J. R. Micr. Soc. 1888, p. 533, 2 pls. (viii & ix).
- IMHOF, O. E. Beitrag zur Kenntniss der Süßwasser-fauna der Vogesen.
 ■ Zool. Anz. No. 290 (1888), p. 565.
- KELLICOTT, D. S. The nature of *Protozoa*, and the lessons of these
 ■ simplest animals, with an account of what has been done in America
 ■ to elucidate the group. Am. Micr. J. ix, pp. 159-172.
- KILIAN, W. Description géologique de la Montagne du Lure. (Occa-
 ■ sional lists of *Foraminifera*.) Ann. Sci. Géol. xx, Nos. 1 & 2.
- KRAUSE, ARTH. Ueber das Vorkommen von Foraminiferen in einem
 ■ Jurageschiebe. SB. nat. Fr. No. 3, pp. 38 & 39.
- KUNSTLER, J. (1) Foraminifère nouveau. C.R. cvi, No. 11, pp. 769-
 ■ 771. [Transl. in Ann. N. H. (6) i, No. 4, pp. 311-313; abstr. in
 ■ J. R. Micr. Soc. 1888, iii, pp. 437 & 438.]
- (2) *Diplocystis schneiderii*. [Abstr. in J. R. Micr. Soc. 1888, i,
 ■ p. 68. See Zool. Rec. xxiv, Prot. 80.]
- (3) Les éléments vésiculaires du protoplasme chez les Protozoaires.
 ■ C.R. xxiv, pp. 1684-1686. [Abstr. in J. R. Micr. Soc. 1888, p. 748.]
- (4) Sur une méthode de préparation des filaments tégumentaires
 ■ des Flagellés. C.R. cvii, No. 2, pp. 138 & 139.
- LEMOINE, —. Les êtres infiniment petits et infiniment anciens. Ac.
 ■ Nat. de Rheims. Rev. Sci. (3) xli, No. 1, p. 13.
- LEYDIG, F. Parasiten im Blute der Krebse. Zool. Anz. 11 Jahrg., No.
 ■ 288, p. 515.
- LINDNER, O. Ueber eine neue Gattung von Infusorien. [Abstr. in
 ■ CB. Bakt. Parasit, 1 Jahrg., i, p. 204; and in J. R. Micr. Soc.
 ■ 1887.]
- MAGGI, L. (1) Protistologia Medica. Classe: *Lobosa*. Boll. scient. x,
 ■ p. 30.
 ■ 1888. [VOL. XXV.]

- [MAGGI, L.] (2) Intorno ai Protozoi viventi sui Muschi delle piante. Rend. Ist. Lombardo, xxi, vi, pp. 300-311 (1 cold. pl.) ; also Arch. Ital. Biol. x, pp. 184-189.
- MALAGOLI, M. (1) Il Calcare di Bismantova e i suoi fossili microscopici. Atti (Rend. Mem.) Soc. Mod. Mem. vii, pp. 110-118, 3 pls.
- . (2) Descrizione di alcuni Foraminiferi nuovi del Tortoniano di Montegibbio. *Op. cit.* 1888, pp. 1-6, 2 pls.
- MARIANI, E. (1) Foraminiferi delle Marne Plioceniche di Savona. Atti Soc. Ital. xxxi, pp. 91-128, 1 pl.
- . (2) Foraminiferi della Collina di S. Colombano Lodigiano. Rend. Ist. Lombardo, xxi, p. 496.
- MASKELL, W. M. Fresh-water *Infusoria* of Wellington District. N. Z. Ann. N. H. ii (1888), pp. 275 & 276. [See J. R. Micr. Soc. 1888, p. 972.]
- MAUPAS, E. (1) Sur la conjugaison des Vorticellides. C.R. cvi, pp. 1607-1610. [Abstr. in J. R. Micr. Soc. 1888, p. 752.]
- . (2) Recherches expérimentales sur la multiplication des Infusoires Ciliés. Arch. Z. expér. vi, pp. 165-277, 4 pls.
- . (3) Abstract of his paper on the Conjugation of *Paramœcium*. J. R. Micr. Soc. 1888, p. 65. [See Zool. Rec. xxiv, *Prot.* 90.]
- . (4) Abstract of his paper on the Conjugation of *Infusoria*, in the J. R. Micr. Soc. Am. Nat. xxii, pp. 255 & 256.
- MEISSNER, M. Beiträge zur Ernährungs-physiologie der Protozoen. Z. wiss. Zool. xvi, pp. 498-516 ; sep., Berlin : 1888, 8vo, 31 pp. [Abstr. in Biol. Centralbl. viii, p. 548 ; J. R. Micr. Soc. 1888, p. 749 ; Ann. Micrograph. i, p. 79.]
- MÖBIUS, K. (1) Bruchstücke einer Infusorienfauna der Kieler Bucht. Arch. f. Nat. 1888, pp. 81-116, 4 pls.
- . (2) Abstract of his paper on "Direct division of nucleus in *Euplotes harpa*." J. R. Micr. Soc. 1888, iii, p. 436. [See Zool. Rec. xxiv, *Prot.* 93.]
- . (3). Review of his paper on "Das Flaschentierchen, *Follicula ampulla*," by ZACHARIAS. Biol. Centralbl. vii (1888) p. 721. [Also see J. R. Micr. Soc. 1888, p. 598.]
- NEUMAYR, M. Abstract of his paper on the Relationships of *Foraminifera*. J. R. Micr. Soc. 1888, p. 66. [See Zool. Rec. xxiv, *Prot.*]
- NUTTING, C. C. Description of a supposed new species of Acinetan (*Podophrya compressa*) Am. Nat. xxii, Jan., pp. 13-17, 1 pl. [Abstr. in J. R. Micr. Soc. 1888, iii, p. 438]
- °PANTANELLI, D. (1) Radiolarie dei diaspri. Atti (Mem.) Soc. Tosc. vi, pp. 11 & 12.
- . (2) Radiolarie mioceniche dell' Apennino. Atti Soc. Mod. Mem. iii, p. 125.

- PARONA, C. Abstract of his paper, "Protisti parassiti nella *Ciona intestinalis*, L., del porto di Genova." CB. Bakt. Parasit, 1 Jahrg., i, p. 155. [See Zool. Rec. xxiv, Prot.]
- PEARCEY, F. G. Notes on the *Foraminifera* of the Faroe Channel and Wyville Thomson Ridge, with description of a new species of *Hyperammina*. Tr. N. H. Soc. Glasg. 1888, 1 pl.
- *PENARD, E. Recherches sur le *Ceratium macroceros*, avec observations sur le *Ceratium cornutum*. Geneva (Privat): 1888, 4to.
- PERRONCITO, [PROF.] E. (1) Ueber die Art der Verbreitung des *Cercomonas intestinalis*. CB. Bakt. Parasit. iv (1888), p. 220.
- (2) Note sur l'enkystement du Megastome intestinal. Bull. Soc. Z. Fr. xiii (1), pp. 16-18. [Also Arch. Ital. Biol. ix (2), pp. 165-167; abstr. in J. R. Micr. Soc. 1888, p. 439.]
- PFEIFFER, L. Abstract of his paper, "Ein neuer Parasit des Pockenprocesses aus der Gruppe der Sporozoen." CB. Bakt. Parasit. 1 Jahrg., 2 Bd., pp. 126 & 127. [See Zool. Rec. xxiv, Prot. 101b.]
- PLATE, L. Studien ueber Protozoen. Zool. Jahrb. abth. f. anat. u. ontog. 3 Bd., 1888, pp. 135-200, 3 pls. [Transl. in Ann. N. H. 1888, p. 431.]
- I. Die Gattung *Acinetoides*, n. g. Intermediär-Form zwischen den ciliaten Infusorien and den Acineten, pp. 135-143.
 - II. *Asellicola digitata*, die "gefingerete Acinete" Stein's, pp. 143-155.
 - III. Zwei neue *Lugenophrys*-Arten, pp. 155-167.
 - IV. *Epistylis simulans*, n. sp., pp. 167-171.
 - V. *Heliochona sessilis*, eine neue Vorticelline, p. 172.
 - VI. *Aegyria oliva*, Cl. et Lach.
 - VII. Bemerkungen über *Noctiluca miliaris* und das durch sie hervorgerufen Meerleuchten, pp. 174-180.
 - VIII. Die Copulation und die Conjugation von *Paramæcium putrinum*, pp. 180-188.
 - IX. Schlussbetrachtungen über das Wesen der Copulation und der Conjugation, pp. 188-198.
- POUCHET, G. De la multiplication provoquée et de la Forme des Noctiluques. C.R. Soc. Biol. v, pp. 575 & 576.
- REES, J. VAN. Denkbescieden over den mogenlijken oorsprong der sexuele voortplanting bij Protozoën. Tijdschr. Nederl. Dierk. Ver. (2) D 1, Afl. 3, 4 Versl., pp. ccix & ccx.
- RHUMBLER, L. Die verschiedenen Cystenbildungen und die Entwicklungsgeschichte der holotrichen Infusoriengattung *Colpoda*. Z. wiss. Zool. xlv, pp. 549-601, 1 pl., and 1 woodcut. [See J. R. Micr. Soc. 1888, p. 970, and Ann. Micrograph. i, p. 44.]
- RICHARD, M. J. On the Pelagic Fauna of some Lakes in Auvergne. Ann. N. H. i (1888), p. 63.
- RIGGI GIUS. Protozoi e Protofiti. Differenze ed affinità. Nat. Sicil. i, No. 3, pp. 66-71; No. 4, pp. 76-82.

- *RÜST, —. Beiträge zur Kenntniss der fossilen Radiolarien aus Gesteinen der Kreide. *Paläontogr.* xxxiv, pp. 181–214, 8 pls.; also sep., Stuttgart (Schweizerbart): 1888, 4to.
- RYDER, J. A. On the resemblance of the primitive *Foraminifera* and of ovarian ova. *P. Ac. Philad.* 1888, p. 73.
- *RZEHAŁ, A. Die Foraminiferen des kieseligen Kalkes von Nieder-Hollabrunn, und des Melettmergels der Umgebung von Brudernhoff in Niederösterreich. *Ann. Hofmuseum Wien*, iii, pp. 257–270; also sep., Wien (A. Holder): 1888, 8vo.
- SACCHI, M. Intorno ai Protisti dei Muschi ed ai loro Incistamento. *Boll. scient.* x, pp. 35–56. [Transl. in *J. Microgr.* xii, Nos. 11, 12, & 13.]
- SCHEWIAKOFF, W. Abstract of his paper on Karyokinesis in *Euglypha alveolata*. *J. R. Micr. Soc.* 1888, i, pp. 66–68. [See *Zool. Rec.* xxiv, *Prot.* 110; also German abstract in *Biol. Centralbl.* viii, No. 9, p. 272.]
- SCHLUMBERGER, CH. Note sur les *Biloculina bulloides*, d'Orb., et *Biloculina ringens*, Lamk., avec 1 pl. et figg. *Bull. Soc. géol.* (3) xv, No. 7, pp. 573–584.
- SCHUBERG, AUG. Die Protozoen des Wiederkäuermagens. *Zool. Jahrb. Abth. f. System.* iii, pp. 365–418, 2 pls. [See *Ann. Micrograph.* i, p. 47, and *J. R. Micr. Soc.* 1888, pp. 975–977.]
- SEGUENZA, G. Della *Lingulopsis carlofortensis*. *Nat. Sicil.* iii, No. 4, pp. 135–137.
- SHERBORN, CH. DAVIES. (1) An "Instructive" Bibliography of the *Foraminifera*. *Nature*, xxxvii, No. 964, pp. 583 & 584.
Founded on A. Woodward's "Bibliography of Foram.," in 14 "Ann. Rep. Geogr. and Nat. Hist. Survey of Minnesota," in *J. N. Y. Micr. Soc.*
- *—. (2) A Bibliography of the *Foraminifera*, Recent and Fossil, from 1565 to 1888, with notes explanatory of some of the rare and little-known publications. London: 1888, 8vo, vii & 152 pp.
- *STEINMANN, G. Elemente der Paläontologie. Part i. *Ervertebrata (Protozoa, Gastropoda)*. Leipzig (Engelmann): 1888, 8vo.
- ✓ STOKES, A. C. (1) Notices of New *Infusoria Flagellata* from American Fresh Waters. *J. R. Micr. Soc.* 1888, pp. 698–704, 1 pl.
- *—. (2) A Preliminary Contribution towards a History of the Fresh-water *Infusoria* of the United States. *J. Trenton Soc.* No. 3, pp. 71–319, 13 pls.
- . (3) A generic Synopsis of the Sedentary Fresh-water *Peritricha*. *Am. Micr. J.* ix, Apr., pp. 59–64, 1 pl.
- . (4) Abstract of his Notices of new Fresh-water *Infusoria*. *J. R. Micr. Soc.* 1888, pp. 65 & 66. [See *Zool. Rec.* xxiv, *Prot.*]
- ŠTOLC, ANTONIN. *Bicosaca vacillans*, n. sp. Ze studii o mikroskopické fauně vod pražských. *SB. böhm. Ges.* 1887, pp. 576–589, 1 pl.

- VALLENTIN, R. *Paorospermium lucernariae*. Zool. Anz. xi (1888), p. 622.
- VERWORN, M. Biologische Protisten-Studien. Z. wiss. Zool. xlv, pt. 4, pp. 455-470, 1 pl., 3 woodcuts. [Abstr. in Biol. Centrabl. viii, No. 17, p. 518; J. R. Micr. Soc. 1888, p. 755; Ann. Micrograph. i, p. 80.]
- WALKER, J. Die geographische Verbreitung der Foraminiferen auf der Secca di Benda Palumna im Golfe von Neapel. MT. z. Stat. Neap. viii, pt. 2, pp. 377-384, 2 pls.
- WIERZEJSKI, A. Kleiner Beitrag zur Kenntniss des *Paorospermium haeckelii*. Zool. Anz. 11 Jahrg., No. 278, p. 230. [Abstr. in J. R. Micr. Soc. 1888, p. 598.]
- WISNIOWSKI, TH. Beitrag zur Kenntniss der Microfauna aus den oberjurassischen Feuersteinknollen der Umgegend von Krakau. JB. geol. Reichsanst. xxxviii, p. 657, pls. xii & xiii.
Radiolaria, p. 680; *Foraminifera*, p. 692.
- WYSOTZKI, A. W. *Mastigophora* i *Rhizopoda* naidenny v Weissowom i Ryepnom ozerach. (*Mastigophora* and *Rhizopoda* found in lakes Weissowo and Repnoie). Trudui St. Petersburg Nat. xxi, 1887, pp. 119-140, 2 pls.
- *ХАВКЕН, В. Законы наследственности v premyeneniye k. odnoklyetnyem organezam. (Laws of heredity applied to unicellular organisms.) Zapiski Novoross. Obsch. Estestv. xii, pt. 1, pp. 237-258, 1 pl.
- ZACHARIAS, O. (1) Über *Paorospermium haeckelii*. Zool. Anz. 11 Jahrg., No. 270, p. 49. [Transl. in Ann. N. H. (6) i (March), p. 233; abstr. in J. R. Micr. Soc. 1888, pt. ii, p. 240.]
- . (2) Ueber Pseudopodia und Geisseln. Biol. Centralbl. viii, No. 18, p. 548.

II.—SYSTEMATIC.

GENERAL.

RIGGI, KELLICOTT, KUNSTLER, LEMOINE, MAGGI (2), MEISSNER, GREEF, GRUBER.

Protozoa of Plymouth Sound; HEAPE.

Freshwater fauna of the Voeges; IMHOF.

Pelagic fauna of the Auvergne lakes; RICHARD.

Protozoa in the stomach of Ruminants; SCHUBERG.

Parasitic *Protozoa*; GRASSI.

Protozoa of Corsica; GOURRET & RIESER (1).

Protozoa of the Azores; BARROIS.

Freshwater *Protozoa*; CATTANEO (2). An appendix to his paper, "Sui Protisti del Lago di Como"; Boll. Sci. 1882; no n. spp.

New Zealand fresh-water *Infusoria*; MASKELL.

Various papers on *Infusoria*; MATTHEWS.

Infusoria of Kiel Bay ; MÖBIUS.

Fresh-water *Infusoria* ; STOKES (2).

ENTZ gives an historico-critical review, of nearly 250 pp., on "*Protista*," Hungarian and German.

SACCHI describes numerous species of *Protista*. Some are queried, but no new names are suggested.

A.—GYMNOMYXA.

GENERAL.

CARTER.

GRUBER (2).

Mastipophora gymnomyxa ; WYSSOTZKIJ.

Fresh-water *Rhizopoda* ; HARVEY.

Many *Protista* described ; SACCHI.

Class 1.—PROTEOMYXA.

Proteomyxa pallida, n. sp., GRUBER (2).

Lieberkühnia bütschlii, n. sp., *id.*

Haplococcus reticulatus, Zopf., proves to be nothing but *Lycopodium* spores ; Biol. Centralbl. viii, p. 147.

Class 3.—LOBOSA.

MAGGI (1).

Amæba monociliata, n. sp., GOURRET & RÆSER, p. 201, pl. xv, figs. 11 & 12.

Amæba anthyllion, n. sp., MAGGI, p. 308, fig. 1.

Amæba velifera, n. sp., *id.* p. 308, fig. 2.

Hyalodiscus hyalinus, n. sp., *id.* p. 309, fig. 3.

Arcella aureola, n. sp., *id.* p. 310, figs. 4 & 5.

Euglypha zonata, n. sp., *id.* p. 310, fig. 7.

Euglypha alveolata ; BLOCHMANN.

Endobiella bambekii, n. sp., DE BRUYNE.

Class 6.—RETICULARIA.

GENERAL.

Carboniferous *Foraminifera* ; HOWCHIN.

Foraminifera from the Abrolhos Bank ; BRADY (1).

Foraminifera of the Basses-Alpes ; DEECKE.

Modenese *Foraminifera* ; MALAGOLI (2).

Foraminifera of Savona ; MARIANI.

Farøe *Foraminifera* ; PEARCEY.

Austrian *Foraminifera* ; RZEHAK.

Recent and fossil *Foraminifera* ; SHERBORN (Bibliography).

Foraminifera of Carniola ; DEECKE.

Many doubtful species of *Foraminifera* described and figured in WISNIOWSKI.

(a) IMPERFORATA.

Order GROMIDEA.

Gromia brunnerii; BLANC.*Parkeria*; CARTER (2).

Order MILIOLIDEA.

Orbitolites mantelli; CARTER.*Biloculina bulloides* and *B. ringens*; SCHLUMBERGER.

Order LITUOLIDEA.

Lituola rotunda, Tibalt, "D" Limestone, HOWCHIN, p. 536, pl. viii, figs. 5 & 6.*Webbina fimbriata*, Tibalt, "D" Limestone, *id.* p. 538, pl. viii, figs. 8 & 9.*Endothyra conspicua*, Tibalt, "D" Limestone, *id.* p. 540, pl. ix, fig. 12.*Endothyra circumplicata*, Tibalt and Cowburn, *id.* p. 541, pl. viii, figs. 10 & 11.*Stacheia moriformis*, Limestone, *id.* p. 543, pl. ix, figs. 19 & 20.

The above forms, either new to science or hitherto unobserved in Palaeozoic rocks, were found in the north of England. The author has other Foraminiferous specimens, whose systematic position he has not yet definitely decided.

(b) PERFORATA.

Order LAGENIDEA.

Patellina bradyana, Tibalt, "D" Limestone, HOWCHIN, p. 544, pl. ix. Silurian *Lagenæ*; BRADY (4).

Order NUMMULINIDEA.

Eozoon canadense; DAWSON.

MISCELLANEOUS.

Fronicularia zinola, n. sp., MARIANI, p. 113, pl. i, fig. 4.*Marginulina dentaliformis* and *M. marginata*, n. spp., *id.* p. 113, pl. i, figs. 5 & 6.*Urigerina uncinata*, n. sp., *id.* p. 119, pl. i, fig. 7.*Stoliczkiella theobaldi*, n. g. & sp., from the Karacovam Range, CARTER, (1) p. 172, pl. xiii, figs. 1-4.*Millarella cantabrigiensis*, n. g. & sp., Cambridge Greensand, *id.* p. 178, pl. xiii, figs. 6-8. These two genera are allied to *Loftusia*.*Ehrenbergina bicornis*, n. sp., BRADY (2).*Spharodina ornata*, n. sp., *id.*

Class 7.—RADIOLARIA.

DREYER establishes the new family SPHÆROPYLIDA (p. 87), with two sub-families ;—

1st subfam. MONOSTOMIDA, with n. gg. *Sphæropyle* and *Prunopyle*.

The n. spp. are :—

- S. hœckelii*, p. 88, fig. 53.
- S. langii*, p. 89, fig. 54.
- S. weissenborner*, p. 90, fig. 55.
- S. heteropora*, p. 91, fig. 52.
- S. kükenenthalii*, p. 92, fig. 27.
- S. mespilus*, p. 92, fig. 39.
- S. ovulum*, p. 93, fig. 40.
- S. walteri*, p. 93, fig. 28.
- P. pyriformis*, p. 94, fig. 19.
- P. haackii*, p. 95, fig. 26.
- P. waltheri*, p. 96, fig. 36.
- P. burbachii*, p. 96, fig. 34.
- P. petrosa*, p. 97, fig. 38.
- P. craticulata*, p. 98, fig. 35.
- P. semoni*, p. 98, fig. 37.
- P. solida*, p. 99, fig. 29.
- P. monocystis*, p. 99, fig. 23.
- P. antarctica*, p. 100, fig. 75.

2nd subfam. AMPHISTOMIDA, with n. g. *Stomatosphera*. The n. spp. are :—

- S. dinoceras*, p. 102, fig. 76, and
- S. amphistoma*, p. 102, fig. 30.

Placopyle stomatophora, n. g. & sp., DREYER, p. 104, fig. 10. For this animal he establishes a new subfamily, PHACOPYLIDÆ.

Ommatodiscus murrayi, and *O. amphiacanthus*, *O. variabilis*, *O. bathybius*, *O. spiralis*, *O. ellipticus*, *O. irregularis* ; DREYER, pp. 107–112, figs. 56–62.

Stomatodiscus spiralis, n. sp., *id.*

Spongopyle, n. g., with n. spp. *S. circulans*, *S. osculosa*, *S. setosa*, *S. orata*, *S. elliptica*, *S. variabilis*, *S. stöhrii*, *S. aspera* ; DREYER, pp. 118–123, figs. 64, &c. For this n. g. he establishes the new subfam. SPONGOPYLIDA.

Larcopyle bütschlii, n. g. & sp., *id.* p. 124, fig. 20. For this genus he establishes the new fam. LARCOPYLIDA.

Coronosphera amphistoma, n. sp., *id.* p. 128, fig. 86.

Haliomina darwinii, n. sp., *id.*

Ellipsosiphus solidus, n. sp., *id.* p. 129, fig. 20.

Xiphatractus stahlii and *X. umbilicatus*, n. spp., *id.* p. 129.

Spongotrochus antarcticus, n. sp., *id.* p. 131.

Archicorys porostoma, n. sp., *id.* p. 132, fig. 77.

PANTANELLI. *Radiolaria* (Miocene, &c.).

Fossil *Radiolaria* ; RÜST.

HÆCKEL, in pts. 3 and 4 of his monograph, treats of the *Acantharia*

and *Phoxotaria* of the 'Challenger' expedition. There are twelve and thirty plates respectively.

Cenosphaera megapora, n. sp., WISNIOWSKI, p. 683, pl. xiii, fig. 47.

Cenellipsis subsphaerica, n. sp., *id.* p. 685, pl. xiii, fig. 51.

Podobursa dunikowskii, n. g. & sp., *id.* p. 686, pl. xiii, fig. 54.

Cyrtocalpis struscorum, n. sp., *id.* p. 688, pl. xiii, fig. 56.

Archicapsa rüsti, n. sp., *id.* p. 688, pl. xiii, fig. 57.

Podocapsa trigonia, n. sp., *id.* p. 688, pl. xiii, fig. 58.

Tricolocapsa deformis, n. sp., *id.* p. 689, pl. xiii, fig. 59.

B.—CORTICATA.

Class 1.—SPOROZOA.

A Sarcosporid from the muscle of *Palæmon rectirostris*; LEYDIG; HENNEGUY (1).

New Sporozoon; PFEIFFER.

(a) GREGARINIDEA.

A gregarine from *Perichata*; BEDDARD (1).

(b) COCCIDEA.

A *Coccidium* infesting *Perichata*; BEDDARD (2).

Hæmatozoaria; BLANCHARD (2).

Psorospermium lucernariæ; VALLENTIN, R.

P. haeckelii; WIERZEJSKI; ZACHARIAS.

Class 2.—FLAGELLATA.

American fresh-water *Flagellata*; STOKES (1).

(a) LISSOFLAGELLATA.

Monas dunali; BLANCHARD (3).

Monadinium balbiani, n. g. & sp., FABRE-DOMERGUE, p. 35, figs. 43-50.

Paramonas ovalis, n. sp., GOURRET & RÆSER, p. 198, pl. xv, figs. 8 & 9.

Dinomonas mediocanella and *D. acuta*, n. spp., *id.* p. 199, pl. xv.

Mastigamœba flexuosa, n. sp., STOKES, (1) p. 698, fig. 1.

Petalomonas orbicularis, n. sp., *id.* p. 702, fig. 21.

Sterromonas parvula, n. sp., *id.* p. 704, fig. 26.

Entobellus bambekii, n. sp., DE BRUYNE (1).

Cercomonas truncata, *C. heteropilum*, *C. lapsa*, *C. undulans*, *C. mutabilis*, n. spp., STOKES, (1) p. 699, figs. 10-12.

Cercomonas intestinalis; PERRONCITO.

Hymenomonas flava and *H. fusiformis*, n. spp., *id.* p. 703, figs. 23 & 24.

Urcosolus ovatus, n. sp., MÖBIUS, (1) p. 107, pl. ix, figs. 1-3.

Heteromita granulifera, *H. tremula*, *H. stagnalis*, *H. sphagni*, *H. nasuta*, *H. parviflora*, n. spp. (America), STOKES, (1) p. 700, figs. 14-19.

Euglena; FRANKHAUSER: also GARCIA, who believes *Euglena* to be a vegetable—an Alga, fam. *Siphonæ*, tribe *Sciadieæ*.

Tetramitus frondarius and *T. truncata*, n. spp., STOKES, (1) p. 701, figs. 20 & 21.

Megastomum entericum, GRASSI & SCHEWIAKOFF.

Megastomum intestinale; PERRONCIO.

Atractonema pusilla, n. sp., STOKES, (1) p. 702, fig. 22.

Diplomastix dahlui, n. sp., MÖBIUS, (1) p. 109, pl. x, figs. 30a-d.

Hymenonema sphagni, n. g. & sp., STOKES, (1) p. 703.

Zygoselmis obovata, n. sp., *id.* p. 703, fig. 23.

Anisonema obliqua, n. sp., *id.* p. 704, fig. 27.

Anisonema multicostatum, n. sp., MÖBIUS, (1) p. 108, pl. ix, figs. 4-8.

Bicosæca vacillans, n. sp., STOLC.

Lambia intestinalis, n. n., for *Megastoma intestinale*; BLANCHARD (1).

GRASSI accepts FISCHE's establishment of *Grassia ranarum*, in place of his *Monere*. He maintains his genus *Paramecioides* against Bütschli.

See DANGEARD on the *Cryptomonidæ*. He considers KÜNSTLER's work inaccurate.

(b) CHOANO-FLAGELLATA.

Salpingoeca procera, n. sp., MÖBIUS, (1) p. 105, pl. x.

Mononiga sinuosa, n. sp., *id.* p. 106, pl. x.

Trichonema gracile, n. sp. (Cilio-flagellate), *id.* p. 105, pl. x.

Class 3.—DINOFLAGELLATA.

Polikrikos and its species; BOVIER-LAPIERRE.

Systematic review of *Dinoflagellata* of the Gulf of Naples; DADAY (2).

Ceratium macroceros and *C. cornutum*; PENARD.

Class 4.—RYNCOFLAGELLATA.

Noctiluca; HENNEGUY (2), POUCHET.

Noctiluca miliaris; PLATE (7).

Class 5.—CILIATA.

FABRE-DOMERGUE.

Order PERITRICHIA.

Clypoleum, n. g., not closely allied to any known form; GOURRET & RIESER, (1) p. 169, pl. xiii, figs. 8-11.

Leiotricha serpularium, n. g. & sp., FABRE-DOMERGUE, (1) p. 240; *id.*, (4) p. 247, figs. 9-18.

Anhymenia, n. g., *id.* (1), *id.*, (4) p. 249.

Cyclocyrrha ophyothricis, n. g. & sp., *id.*, (1) p. 240, *id.*, (4) p. 252, figs. 27-29.

- Trichodina bidentata*, n. sp., *id.*, (1) p. 240, *id.*, (4) p. 253, fig. 30.
Lagenophrys asselli and *A. aperta*, n. spp., PLATE, (3) p. 155, pl. iii.
Schypidium scorpenæ, n. sp., FABRE-DOMERGUE, (4) p. 258, fig. 41.
Epistylis simulans, n. sp., PLATE, (4) p. 167, pl. iv, figs. 41-45.
Hemispira asteriasi, n. g. & sp., FABRE-DOMERGUE, (4) p. 255, figs. 31-33.
Rhabdostyla arenicolæ, n. sp., *id.*, p. 257, figs. 34-40.
Heliobona sessilis, n. sp., PLATE, (5) p. 172, pl. iv, figs. 49-51.
Vorticella; BOLIVAR.
Urceolaria; FABRE-DOMERGUE (1). Especially the genus *Trichodina*.
Vorticellidæ; MAUPAS (1).
Rhabdostyla commensalis, n. sp., MÖBIUS, (1) p. 94, pl. vii.
 Sedentary *Peritricha*; STOKES (3).

Order HYPOTRICHA.

- Chilodon auricula*, n. sp., Corsica, GOURRET & RÆSER, p. 172, pl. xiv, figs. 4 & 5.
Kerona ciliata, n. sp., Corsica, *id.* p. 178, pl. xiv, figs. 1-12.
Holosticha coronata, n. sp., Corsica, *id.* p. 182, pl. xv, fig. 1.
Amphisiaella, n. g., allied to *Amphisia*; *id.* p. 180, pl. xiv, fig. 9.
Stylometes fusiformis, n. sp., Corsica, *id.* p. 190, pl. xiv, fig. 13.
Psilotrix ovalis, n. g. & sp., Corsica, *id.* p. 192, pl. xv, fig. 2.
Euplotes harpa; MÖBIUS (2).
Stichotricha gracilis, *S. saginata*, *S. horrida*, n. spp., *id.*, (1) p. 87, pl. vi, figs. 4-6.
Ægyra semilunaris, *Æ. cristata*, and *Æ. compressa*, n. spp., Corsica, GOURRET & RÆSER, p. 174, pl. xiii.
Ægyra oliva; PLATE (6).

Order HETEROTRICHA.

- Folliculina abyssorum*, *F. limnoria*, *F. paranthura*, *F. violacea*, n. spp., GIARD, pl. xx.
Pebrilla paguri, n. sp., *id.* pl. xx.
Nyctotherus hæmatobius, n. sp., found in gill of *Apus cancriformis*; ENTZ.
Tintinnidium neapolitanum, n. sp., DADAY, p. 524, pl. xix, fig. 32.
Tintinnus fraknoi, *T. angustatus*, n. spp., *id.* pp. 528 & 531, pl. xviii, figs. 1 & 15.
Amphorella, n. g., with n. spp. *striata*, *punctatostriata*, *tuberculata*, and *norvegica*, *id.* pp. 533-544, pl. xviii.
Tintinnopsis vosmaeri, *T. davidoffi*, *T. lobiancoi*, *T. infundibulum*, *T. lindeni*, *T. angulata*, with *T. lyseri*, pp. 549-561, pls. xix & xx.
Undella, n. g., with n. spp. *hyalina*, *dohr* pp. 564-568, pl. xviii.
Codonella bornandi, n. sp., *id.* p. 569, pl.

Cyttaroroclis brevicollis, *C. laticollis*, *C. acuminata*, *C. treforti*, and *C. markusovskyi*, n. spp., *id.* p. 757, pls. xx & xxi.

The above species of *Tintinnodea* are given in the monograph by DADAY. An historical *resumé* of the subject will be found on pp. 475–479; pp. 522–591 are systematic.

Porpostoma notatum, n. g. & sp., MÖBIUS, (1) p. 90, pl. vii.

Chilodon crebricostatus, n. sp., *id.* p. 89, pl. vi.

Order HOLOTRICHA.

Colpodopsis latifrons, n. g. and sp., Corsica, GOURRET & RÆSER, p. 156, pl. xiii.

Cryptochilum fusiforme, n. sp., *id.* p. 160, pl. xiii, figs. 2 & 3.

Aulas pancisetosa, n. sp., *id.* p. 163, pl. xiii, fig. 7.

Anophrys maggii, n. sp., in the blood of *Carcinus maenas*; CATTANEO (1).

Tractelocercus minor, n. sp., GRUBER (1).

Epiclinitis vermis, n. sp., *id.*

Paramœcium putrinum; PLATE (8).

Colpoda; RHUMBLER.

Anoplophrya sp., parasitic in the alimentary canal of *Ælosoma chlorostichum*; ANDERSON.

Hoplitophrya fastigata, n. sp., MÖBIUS, p. 104, pl. ix.

INCERTÆ SEDIS.

Strombidium sulcatum, n. sp., GOURRET & RÆSER, (2) p. 660.

Glossa corsica, n. g. & sp., *id.* p. 661.

Class 6.—ACINETARIA.

DADAY (4).

Podophrya compressa (fresh water); NUTTING.

Bütschlia parva, n. g. & sp., SCHUBERG, p. 372, pl. xii, figs. 1 & 2.

Bütschlia neglecta, n. sp., *id.* p. 374, pl. xii, fig. 3.

Dasytricha ruminantium, n. g. & sp., *id.* p. 386, pl. xiii, figs. 17–26.

Entodinium minimum, n. sp., *id.* p. 410, pl. xii, fig. 9.

Acinetoides greefi and *A. zoothamnii*, n. g. & spp. PLATE, (1) p. 136, pl. iii (from colony of *Zoothamnium* from B. of Naples).

Psorospermium lucernariæ, n. sp., in tissues of *Lucernaria auricula*; VALLENTIN.

Asseliculata digitata; PLATE (2).

III.—MORPHOLOGY AND LIFE HISTORY.

General.

The Protoplasmic substance of the body of *Ciliata* consists of—(1) *Hyaloplasma*, the real vital and contractile substance; (2) *Paraplasma*,

the more solid and skeletal reticulum. The chemical properties of both substances are exactly alike. Different portions of *Hyalopectes* can fuse. FABRE-DOMERGUE, (3) p. 51.

The parasite found by HENNEGUY in *Palamon* was evidently allied to those found hitherto only in Mammals. He was not able to bring about infection, and thus study its life-history.

In continuing his work on *Protozoa*, BÜTSCHLI interposes between pts. 46 & 47 an Introduction to the first volume. He commences with an historical account of *Ciliata*, followed by a phylogenetic table. All unicellular forms arise, not from amoeboid organisms, but from forms intermediate between *Narvodina* and *Mastigophora*. Their best representatives are the *Rhizomastigoda*. The author questions whether any forms are non-nucleated, and therefore rejects *Monera* as the basis of unicellular organisms. The origin of *Infusoria* is uncertain, and that of *Sporozoa* very obscure. The higher plants are derived from the *Protococcoidea*. In continuing the general subject, Bütschli treats of *Ciliata*. There are twelve new plates, and also woodcuts.

FABRE-DOMERGUE (1) gives an historical review and a general description of *Urceolaria*, followed by a special account of certain forms. The author considers that there is very slight evidence in favour of Bütschli's view that *Licinophora* are derived from *Hypotricha*, and *Trichodina* from *Licinophora*. The fixing organ and the suctorial mechanism are described.

Colpoda presents three kinds of cysts, capable of conversion into each other. They are Dividing cysts, Permanent cysts, and Sporocysts. This is a very primitive Ciliate, with a vesicular nucleus. It is related to the *Gregarinida* and the *Coccidia*. It exists in four stages:—(1) a multinuclear, (2) a uninuclear stage, (3) an amoëbo-flagellate stage, and (4) the young *Colpoda*. RHUMBLER.

GULLIVER finds a sharp distinction between exo- and endo-plasm in *Pelomyza palustris*.

DREYER discusses the formation and homologies of the "gates" in *Radiolaria*. They are to the skeleton what the oscula are to the sarcod body (p. 135). He divides the "gate" structures into—Primary, preceding the formation of a definite skeleton; secondary, supplementary to such skeleton. The derivation of the secondary structures is discussed on p. 138, and of primary on p. 153. The influence of the "gate" on the configuration of the whole shell is described on p. 165. Rhizopod shells can be divided into—(1) Those through which the pseudopodia pass out evenly on all sides; (2) Those in which they pass out mainly at one or two openings—the "gates," p. 180. On the constancy of "gates" in the same species, see p. 190. The systematic bearing of these structures, p. 196.

BRADY (3) gives an account of *Orbitolites complanata*, var. *laciniata*, from the Suva Reef, Fiji, in a reproductive condition practically new to morphology. The specimens differed from the 'Challenger' examples in being apparently parasitic when adult, in being less massive, and in having the annular space inclosed by the peripheral wall crammed with very young shells. He discusses the absence of

the "primitive disc" in adult specimens with regard to its bearing on dimorphism and sexuality.

Certain marine *Holotricha* and *Hypotricha* have numerous unmistakable nuclei. The multinuclear form may possibly be an advantage against injuries, each separate portion being capable of regeneration. In *Holosticha scintella* paranuclei, by repeated division, become so small as to escape observation. GRUBER.

MAUPAS (1) describes the results of minute observation of various *Vorticellidæ*. Reproduction is much as in other *Ciliata*. The micro- and macrogametes, though so different in size, play an identical sexual part.

The surface of *Tintinnodea* is always ciliated. In some species there are two kinds of cilia. In most forms, including all marine, the cilia are arranged in four spiral grooves. The peristome is only slightly contractile. DADAY (1).

KUNSTLER (1) describes a new Foraminifer found at Arcachon. Test chitinous and areolar. The areolated protoplasm does not fill the whole test. Five transparent pseudopodia near the mouth. Fairly definite œsophageal tube. Embryos are formed by a chitinous layer appearing round the protoplasm surrounding the nuclei. They escape by the mouth.

Embryos clustered round the anterior end of one specimen of *Podophrya compressa* gave the appearance of exogenous division, and it is thought that similar appearances may have deceived other observers, and that exogenous division is not so common among Acinetans as is sometimes supposed. NUTTING.

PERRONCITO describes the encystment of *Megastoma intestinale* (the *Lambia intestinalis* of Blanchard) in the large intestine of *Mus musculus*.

For the life-history of *Rhizopoda*, see CARTER, F. B.

For anatomical researches on *Ciliata*, see FABRE-DOMERGUE (3).

The morphology of some parasitic *Protozoa*; GRASSI.

KELLCOTT gives a popular account of "the nature of *Protozoa*."

The external conformation of *Tintinnodea* is described by DADAY, (1) on p. 488; the internal structure on subsequent pages. The headings are: The body-substance, The nuclei, and The vacuoles.

Encystment.

Dessication is not the only nor the chief cause of encystment. Cysts for protective purposes differ chemically from those connected with reproduction. Vital operations continue during encystment. Excrement sometimes accumulates between the protoplasm of the cell and the cyst. FABRE-DOMERGUE, (3) pp. 94 & 117.

The encystment of *Megastoma intestinale*. PERRONCITO.

Colpoda (Holotrich) has three kinds of cysts: Dividing Cysts, Permanent Cysts, and Sporocysts. They are capable of conversion into each other. RIHMELER.

Encystment of *Protista*. SACCHI.

Alimentary.

The alimentary tract of *Ciliata* presents various grades of definiteness. *Balantidium elongatum* shows a clear track from mouth to anus, on treatment with caustic potash. FABRE-DOMERGUE, (3) p. 61.

BÜTSCHLI deals exhaustively with the alimentary organs of *Ciliata*. The mouth and gullet, p. 1351. The structure of the anus, p. 1386. The endoplasm and food vacuoles, p. 1391.

The true organs of assimilation in *Colpoda* are the granules or corpuscles of the endoplasm. RHUMBLER.

The manner of feeding of *Podophrya compressa* seems to shew that solid matter is ingested and ejected through the tentacles. NUTTING.

MISS M. GREENWOOD treats of the digestion of *Rhizopoda*.

Excretory.

The contractile vesicles of *Ciliata* are excretory. FABRE-DOMERGUE, (3) p. 70.

During encystment there is often an accumulation of excrement between the cyst and the cell protoplasm. *Id.* p. 117.

Contractile vacuoles are discussed by BÜTSCHLI, on pp. 1411-1459.

RHUMBLER finds them to excrete uric acid.

DE BRUYNE (2) believes that pulsating vacuoles never communicate with the exterior, and therefore cannot be excretory. They are probably respiratory and circulatory.

Motile and Defensive Organs.

For various motile organs of the ectoplasm of *Ciliata*, see BÜTSCHLI, pp. 1314-1351. He also treats of the stalks of Vorticellids, on pp. 1306-1319, and of Trichocysts, on pp. 1459-1469.

ZACHARIAS discusses pseudopodia and flagella. In answer to Gruber's statement that nothing is known of pseudopodia which behave like true flagella, he refers to his own observations on *Polyphemus pediculus*.

DADAY (1), on pp. 479-488, treats of the investment of *Tintinnodea*. Its structure and openings assist in the systematic arrangement of the family.

IV.—PHYSIOLOGY AND DEVELOPMENT.

FABRE-DOMERGUE (3), in the second part of his paper, attempts to show that as soon as the cell becomes developed and individualised, it acquires functions comparable to those of the most highly organised beings. Pp. 40-49 contain a short historical *résumé* of the knowledge of *Ciliata*.

MAUPAS (2) finds that light has no influence on the multiplication of *Ciliata*. There is no proof that conjugation has any accelerating effect on fission. The micronucleus is the essential sexual organ of the *Microzoa*. When, through senile degeneration, this disappears, no reproduc-

tion takes place, even after conjugation. Weismann's theory of the immortality of *Protozoa* is attacked.

BÜTSCHLI, on pp. 1278-1292, deals with the striation observable in various forms of *Ciliata*. On pp. 1293-1303 the *Myonemes*, or contractile fibrils of the ectoplasm, are discussed. For metabolic products—carbohydrates, pigments, &c.—see pp. 1469-1490. He treats of nuclei on p. 1450, and of gelatinous and membranous capsules on p. 1539. Reproduction and the formation of colonies, metamorphosis, gemmation, &c.; *id.* p. 1560.

Assimilation in *Colpoda* is carried on by the granules or corpuscles of the endoplasm, and is effected by the aid of water containing oxygen. Uric acid is passed out by the contractile vacuoles. RHUMBLER.

MEISSNER found that Rhizopods did not act on starch or oil drops, but digested animal and vegetable albumens. Infusorians converted starch into a substance (? dextrin), staining red with iodine solution. Cooked albumen was not acted on. *Amæba princeps* digested a *Diffugia* in twenty-five minutes.

FABRE-DOMERGUE (2) discovers in the protoplasm of Infusorians certain yellow spherules, readily soluble in caustic potash, but less readily after treatment with osmic acid. He calls them "reserve substances."

For further physiological researches on *Ciliata*, see FABRE-DOMERGUE (3).

HENNEGUY investigates the influence of light on *Noctiluca*. He finds this animal to be non-luminous during the day, and brightest two hours after sunset.

KUNSTLER (3) treats of the vesicular elements of the protoplasm of *Protozoa*.

On the division of the nucleus in *Euplotes harpa*, see MÖBIUS (2).

For various papers on the conjugation and reproduction of *Paramæcium* and Vorticellids, see MAUPAS.

MAUPAS (2), on the multiplication of *Ciliata*, gives a full account of the subject, with numerous statistics, and illustrated by good plates.

The subject of Infusorian conjugation is also treated by PLATE (8, 9).

POUCHET deals with artificially incited multiplication in *Noctiluca*.

On sexual reproduction in *Protozoa*, see REES.

Karyokinesis in *Euglypha*; SCHEWIAKOFF.

The conjugation and multiplication of *Tintinnodeu* are discussed by DADAY (1), on p. 508.

V.—PALÆONTOLOGY.

The form of *Eozoon* is not indefinite, but well-preserved specimens show a funnel- or top-shaped form. This fossil is often found in Laurentian Limestones. So-called *Eozoon* specimens in museums are frequently imitative forms of gneiss, &c. DAWSON.

CARTER (3) regards the scarlet spherules found in many fossil *Foraminifera* as elements of reproduction. Similar spherules are found in fresh specimens, but the colour is due to mineralization.

BRADY (1) describes *Foraminifera* from the Abrolhos Bank. The same author gives an account of the so-called "Soapstone" of Fiji, in

which he finds two new species of *Foraminifera*. A specimen of *Orbitolites complanata*, found on the Suva Reef, Fiji, showed an interesting reproductive condition. BRADY (3) [see Morphology]. For Silurian *Lagena*, see BRADY (4).

BURROWS treats of Red Chalk *Foraminifera*.

CARTER (1) on two new genera allied to *Loftusia*. On *Parkeria*, see CARTER (2).

For Carboniferous *Foraminifera*, see HOWCHIN.

MALAGOLI (1) describes the microscopic fossils of the Chalk of Bismantova. In (2) he describes some *Foraminifera* of Modena.

Pliocene *Foraminifera* of Savona are described by MARIANI (1).

For Miocene *Radiolaria* from the Apennines, see PANTANELLI (2).

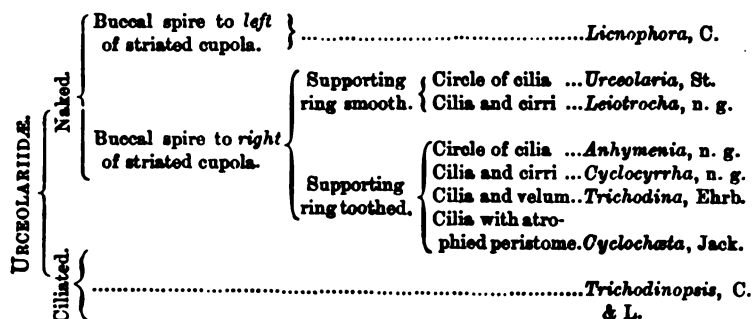
Fossil *Radiolaria*, RÜST, 102 n. spp.

For Austrian Carboniferous *Foraminifera*, see RZEHAK.

Note on two species of *Biloculina*, SCHLUMBERGER.

VI.—CLASSIFICATION.

In attempting a classification of URCEOLARIIDÆ, FABRE-DOMERGUE (1) makes use of the buccal spire and the striated cupola. He suggests the following scheme :—



GRASSI criticises Bütschli's classification of the MONADIDIA, and suggests the following :—

Fam. (1) CERCOMONADINEA, Kent, emend. : with genera — *Herpetomonas*, *Trypanosoma*, *Paramacioides*, *Plagiomonas*, *Hodo*, *Monocercomonas*, *Cimænomonas*, *Costifera*, and *Dicercomonas*.

Fam. (2) MEGASTOMIDEA, Grassi : genus—*Megastoma*.

Fam. (3) LOPHOMONADIDEA, Grassi : genera—*Lophomonas* and *Jænia*.

VII.—GEOGRAPHICAL DISTRIBUTION.

The distribution of *Cercomonas intestinalis*. PERRONCITO.

DADAY (1), on pp. 513–515, gives a table of the genera and species of *Tintinodea*, shewing the geographical distribution.

Pelagic animals at great depths. AGASSIZ ; CHUN.

1888. [VOL. XXV.]

European.

- Parasitic *Protista* of Genoa. PARONA.
 Miocene *Radiolaria* of the Apennines. PANTAVELLI.
 Fresh-water fauna of the Azores. BARROIS.
Infusoria of Kiel Bay. MÖBIUS.
Foraminifera of Savona. MARIANI.
 Modenese *Foraminifera*. MALAGOLI.
Foraminifera in a boulder from the Juras. KRAUSE.
 Fresh-water fauna of the Vosges. IMHOF.
 Fauna . . . of Plymouth Sound. HEAPE.
Protozoa from Como. CATTANEO (2).
Dinoflagellata from Naples. DADAY (2).
Foraminifera from Carniola. DEECKE.
Protozoa of Corsica. GOURRETT & RIESER.
 Genoese *Rhizopoda*. GRUBER (2).
Radiolaria and *Foraminifera* of Krakaw. WISNIOWSKI.
 Pelagic fauna of Auvergne lakes. RICHARD.
 Austrian *Foraminifera*. RZEHAŁ.
 Kiev *Foraminifera*. TUTKOVSKY.
 Neapolitan *Foraminifera*. WALTHER.
Mastigophora and *Rhizopoda* from Lakes Weissow and Repnoje.
 WYSSOTZKIJ.
Foraminifera of the Faroe Channel. PEARCEY. He finds the *Miliolide* and arenaceous types strongly represented in the warm area of the Channel; sparingly in the cold, where *Lagenæ* are more abundant. 228 spp. were taken in this district.

Extra-European.

- American fresh-water *Flagellata*. STOKES.
 Deep-sea *Rhizopoda*. AGASSIZ (2, 3).
 The "Soapstone" of Fiji. BRADY.
Orbitolites mantelli from the Irrawadi. CARTER (4).
 Fresh-water *Infusoria* of the Wellington district, New Zealand.
 MASKEILL.
Foraminifera of the Abrolhos Bank. BRADY (1).

INDEX TO GENERA AND SUBGENERA RECORDED AS NEW IN THIS VOLUME,

INCLUDING NEW NAMES FOR GENERA ALREADY CHARACTERIZED.

-
- | | |
|--|--|
| <i>Aachenosaurus</i> , <i>Smets</i> , Rept. 17 | <i>Agrypon</i> , <i>Foerster</i> , Ina. 193 |
| <i>Aburina</i> , <i>Müschler</i> , Ina. 250 | <i>Aistus</i> , <i>Brunner</i> , Ina. 322 |
| <i>Abylopsis</i> , <i>Chun</i> , Coel. 23 | <i>Akesina</i> , <i>Moore</i> , Ina. 237 |
| <i>Acanthoberosus</i> , <i>Kuwert</i> , Ina. 95 | <i>Albacora</i> , <i>Jordan</i> , Pisces 17 |
| <i>Acanthonotus</i> , <i>Day</i> , Pisces 25 | <i>Alcima</i> , <i>Foerster</i> , Ina. 193 |
| <i>Acanthoptyx</i> , <i>Ancey</i> , Moll. 59 | <i>Alcocerus</i> , <i>Foerster</i> , Ina. 194 |
| <i>Acaulona</i> , <i>Wulp</i> , Ina. 289 | <i>Alcocherna</i> , <i>Foerster</i> , Ina. 196 |
| <i>Accarana</i> , <i>Distant</i> , Ina. 297 | <i>Aldrisma</i> , <i>Fairmaire</i> , Ina. 167 |
| <i>Aconitoides</i> , <i>Plate</i> , Prot. 16 | <i>Alegina</i> , <i>Foerster</i> , Ina. 195 |
| <i>Achranoxia</i> , <i>Kruatz</i> , Ina. 116 | <i>Aletes</i> , <i>Lohmann</i> , Arachn. 24 |
| <i>Aclastus</i> , <i>Foerster</i> , Ina. 194 | <i>Alethia</i> , <i>Champion</i> , Ina. 139 |
| <i>Acmostoma</i> , <i>Rapiachoff</i> , Verm. 27 | <i>Alexeter</i> , <i>Foerster</i> , Ina. 195 |
| <i>Acontistoma</i> , <i>Stebbing</i> , Crust. 19 | <i>Alexeterion</i> , <i>Vaillant</i> , Pisces 22 |
| <i>Acrocalanus</i> , <i>Giesbrecht</i> , Crust. 22 | <i>Algol</i> , <i>Sollas</i> , Spong. 9 |
| <i>Acrodicrania</i> , <i>Skuse</i> , Ina. 282 | <i>Alispoides</i> , <i>Ragonot</i> , Ina. 268 |
| <i>Acrolyta</i> , <i>Foerster</i> , Ina. 194 | <i>Allocamptus</i> , <i>Foerster</i> , Ina. 193 |
| <i>Acroptycha</i> , <i>Quedenfeldt</i> , Ina. 159 | <i>Allocota</i> , <i>Foerster</i> , Ina. 194 |
| <i>Acrotus</i> , <i>Bean</i> , Pisces 17 | <i>Allocostylus</i> , <i>Schnabl</i> , Ina. 294 |
| <i>Actenouyx</i> , <i>Foerster</i> , Ina. 195 | <i>Allocotops</i> , <i>Sharp</i> , Aves 61 |
| <i>Acylomus</i> , <i>Sharp</i> , Ina. 107 | <i>Allocritus</i> , <i>Foerster</i> , Ina. 196 |
| <i>Adexioma</i> , <i>Foerster</i> , Ina. 196 | <i>Allognathus</i> , <i>Pilsbry</i> , Moll. 59 |
| <i>Adiastola</i> , <i>Foerster</i> , Ina. 195 | <i>Allomacrus</i> , <i>Foerster</i> , Ina. 195 |
| <i>Admestina</i> , <i>Peckham</i> , Arachn. 10 | <i>Allophrys</i> , <i>Foerster</i> , Ina. 193 |
| <i>Adranes</i> , <i>Foerster</i> , Ina. 196 | <i>Alloplasta</i> , <i>Foerster</i> , Ina. 194 |
| <i>Aegir</i> , <i>Danielsen</i> , Coel. 32 | <i>Allopleuron</i> , <i>Baur</i> , Rept. 20 |
| <i>Aenigmaticum</i> , <i>Matthews</i> , Ina. 174 | <i>Altoona</i> , <i>Hulst</i> , Ina. 269 |
| <i>Aenoplex</i> , <i>Foerster</i> , Ina. 195 | <i>Amarysius</i> , <i>Fairmaire</i> , Ina. 156 |
| <i>Aeolometis</i> , <i>Foerster</i> , Ina. 196 | <i>Amatrus</i> , <i>Brunner</i> , Ina. 324 |
| <i>Aeschrocnemis</i> , <i>Weise</i> , Ina. 165 | <i>Ambala</i> , <i>Ragonot</i> , Ina. 270 |
| <i>Aethalodes</i> , <i>Gahan</i> , Ina. 157 | <i>Amblypristia</i> , <i>Dames</i> , Pisces 9 |
| <i>Afrinus</i> , <i>Fairmaire</i> , Ina. 137 | <i>Amblyscelis</i> , <i>Gorham</i> , Ina. 171 |
| <i>Agane</i> , <i>Lohmann</i> , Arachn. 24 | <i>Ameloctonus</i> , <i>Foerster</i> , Ina. 194 |
| <i>Agasthenes</i> , <i>Foerster</i> , Ina. 195 | <i>Amersibia</i> , <i>Foerster</i> , Ina. 194 |
| <i>Agnibesa</i> , <i>Moore</i> , Ina. 256 | <i>Amesolytus</i> , <i>Foerster</i> , Ina. 194 |
| <i>Agraphilydrus</i> , <i>Kuwert</i> , Ina. 95 | <i>Amisega</i> , <i>Cameron</i> , Ina. 187 |
| <i>Agrotherentes</i> , <i>Foerster</i> , Ina. 194 | <i>Amorphognathon</i> , <i>Foerster</i> , Ina. 196 |

- Amorphota, *Foerster*, Ins. 193
 Amotus, *Casey*, Ins. 147
 Amphicaryon, *Chun*, Coel. 23
 Amphiclotho, *Gourret*, Arachn. 13
 Amphiplectus, *Bate*, Crust. 15
 Amphisiella, *Gourret & Röser*, Prot. 15
 Amphithomisus, *Gourret*, Arachn. 13
 Amphitrogulus, *Gourret*, Arachn. 16
 Amphius, *Sollas*, Spong. 8
 Amphorella, *Daluy*, Prot. 15
 Amraica, *Moore*, Ins. 253
 Amytta, *Karsch*, Ins. 320
 Anabathra, *Möschler*, Ins. 249
 Anasicudion, *Trouessart*, Arachn. 23
 Andreella, *Jullien*, Pol. 9
 Androphilus, *Sharpe*, Aves 61
 Aneocaris, *Bate*, Crust. 15
 Anecephysis, *Foerster*, Ins. 195
 Anempheres, *Foerster*, Ins. 194
 Aneuclicia, *Foerster*, Ins. 193
 Aneurystypus, *Blackburn*, Ins. 122
 Augustula, *Sterki*, Moll. 64
 Anhymania, *Fabre-Domergue*, Prot. 14
 Aniarophron, *Foerster*, Ins. 194
 Anilastus, *Foerster*, Ins. 194
 Anisocention, *Foerster*, Ins. 195
 Anisotochra, *Karsch*, Ins. 319
 Annulosia, *Jullien*, Pol. 10
 Anomalopterus, *Vaillant*, Pisces 28
 Anopiasta, *Foerster*, Ins. 195
 Anosius, *Fairmaire*, Ins. 145
 Antares, *Sollas*, Spong. 9
 Anthastra, *Sollas*, Spong. 8
 Anthops, *Thomas*, Mamm. 35
 Anthracalaus, *Fairmaire*, Ins. 127
 Antigones, *Pascoe*, Ins. 155
 Antriadophila, *Skuse*, Ins. 282
 Anybostetha, *Quedenfeldt*, Ins. 158
 Apechthis, *Foerster*, Ins. 194
 Aperileptus, *Foerster*, Ins. 194
 Aphalus, *Elliot*, Aves 90
 Aphanilopterus, *Meunier*, Ins. 180
 Aphanistes, *Foerster*, Ins. 193
 Aphanodon, *Foerster*, Ins. 194
 Aphanoroptrum, *Foerster*, Ins. 194
 Apheledes, *Pascoe*, Ins. 155
 Aphelomera, *Skuse*, Ins. 282
 Apimeles, *Foerster*, Ins. 196
 Apoclima, *Foerster*, Ins. 194
 Apophysophora, *Williston*, Ins. 288
 Apotetamenus, *Brunner*, Ins. 322
 Apotrechus, *Brunner*, Ins. 324
 Apsilops, *Foerster*, Ins. 195
 Apterophygus, *Foerster*, Ins. 194
 Aptesis, *Foerster*, Ins. 194
 Apystus, *Foerster*, Ins. 196
 Arachnopusia, *Jullien*, Pol. 11
 Araxates, *Ragonot*, Ins. 269
 Arctolamia, *Gestro*, Ins. 157
 Ardnorhiza, *Wentzel*, Coel. 21
 Ardonis, *Moore*, Ins. 258
 Arethusa, *Haeckel*, Coel. 26
 Aritranis, *Foerster*, Ins. 195
 Armenista, *Haeckel*, Coel. 22
 Arrhenophagus, *Aurivillius*, Ins. 199
 Artemosia, *Bate*, Crust. 14
 Aschistus, *Foerster*, Ins. 195
 Aselasma, *Foerster*, Ins. 196
 Asemesthes, *Simon*, Arachn. 12
 Asinamora, *Foerster*, Ins. 194
 Aspathines, *Champion*, Ins. 127
 A-phragia, *Foerster*, Ins. 194
 Aspidobactrus, *Sharp*, Ins. 97
 Aspidolea, *Bates*, Ins. 120
 Aspithra, *Ragonot*, Ins. 268
 Astacuda, *Moore*, Ins. 253
 Astericola, *Rosoll*, Crust. 23
 Asteroderma, *Perrin*, Ech. 16
 Asteroodon, *Perrin*, Ech. 16
 Asteropus, *Sollas*, Spong. 9
 Asthenara, *Foerster*, Ins. 196
 Asthenomeris, *Foerster*, Ins. 194
 Asthenoptera, *Foerster*, Ins. 195
 Astiphromma, *Foerster*, Ins. 194
 Astomaspis, *Foerster*, Ins. 194
 Astrella, *Sollas*, Spong. 8
 Astrenis, *Foerster*, Ins. 193
 Astropeplus, *Sollas*, Spong. 6
 Asymmetus, *Foerster*, Ins. 195
 Ateleia, *Skuse*, Ins. 282
 Ateleute, *Foerster*, Ins. 194
 Athoralia, *Chun*, Coel. 23
 Athoria, *Haeckel*, Coel. 24
 Atithasus, *Foerster*, Ins. 196
 Atlantica, *Ancey*, Moll. 59
 Atmetus, *Foerster*, Ins. 194
 Atopocerus, *Kraatz*, Ins. 122
 Atopocochlis, *Crosse & Fischer*, Moll. 65
 Atoxon, *Simroth*, Moll. 57
 Atractohelophorus, *Kuvert*, Ins. 96
 Atreates, *Foerster*, Ins. 196
 Atrometus, *Foerster*, Ins. 193
 Atrotura, *Walsingham*, Ins. 278
 Attopsis, *Gourret*, Arachn. 13
 Atyloides, *Stebbing*, Crust. 19
 Atylopsis, *Stebbing*, Crust. 19
 Auchenoplax, *Ehlers*, Verm. 19
 Aulorchis, *Hertwig*, Coel. 31
 Auralia, *Haeckel*, Coel. 25
 Aurisma, *Fairmaire*, Ins. 91
 Aurophysa, *Haeckel*, Coel. 25

- Aurora*, *Sollas*, Spong. 8
Aurora, *Ragonot*, Ins. 271
Auxacia, *Ragonot*, Ins. 267
Averellia, *Ancey*, Moll. 59
Azelus, *Foerster*, Ins. 196
Azemiope, *Boulenger*, Rept. 15
Azygoplon, *Bale*, Cœl. 20

Bachia, *Foerster*, Ins. 195
Bœolidia, *Bergh*, Moll. 67
Bœosemus, *Foerster*, Ins. 195
Banchoides, *Della Torre*, Ins. 191
Bandera, *Ragonot*, Ins. 271
Banepa, *Moore*, Ins. 260
Barandra, *Moore*, Ins. 237
Barbulifer, *Eigenmann*, Pisces 18
Bardanes, *Moore*, Ins. 255
Barisoma, *Fuust*, Ins. 152
Baroda, *Ragonot*, Ins. 269
Barychelus, *Simon*, Arachu. 12
Barycnemis, *Foerster*, Ins. 193
Barydotira, *Foerster*, Ins. 195
Barylpa, *Foerster*, Ins. 193
Baryntica, *Foerster*, Ins. 195
Barytarbes, *Foerster*, Ins. 196
Bathyactis, *Duregne*, Cœl. 31
Bathyaxia, *Ancey*, Moll. 59
Bathycetes, *Foerster*, Ins. 194
Bathymetis, *Foerster*, Ins. 195
Bathyplectes, *Foerster*, Ins. 194
Bathythrix, *Foerster*, Ins. 195
Beddomeia, *Petters*, Moll. 72
Bembicidioides, *Schaufuss*, Ins. 79
Bentheocaris, *Bate*, Crust. 15
Bergrothia, *Kraatz*, Ins. 308
Bermudia, *Ancey*, Moll. 60
Bertia, *Ancey*, Moll. 58
Bethulia, *Ragonot*, Ins. 268
Bhima, *Moore*, Ins. 240
Biafra, *Ragonot*, Ins. 269
Bioblapeis, *Foerster*, Ins. 194
Blapsidotes, *Foerster*, Ins. 195
Blapticus, *Foerster*, Ins. 194
Bocourtia, *Rocheste*, Moll. 63
Boëthus, *Foerster*, Ins. 196
Bolimanius, *Rey*, Ins. 95
Borborothis, *Brunner*, Ins. 322
Boreonymphon, *Sars*, Arachn. 25
Bothochius, *Rey*, Ins. 95
Bothrioneuron, *Stoll*, Verm. 19
Bothrolabis, *Cope*, Mamm. 54
Bothynophrya, *Foerster*, Ins. 194
Bovallia, *Pfeffer*, Crust. 19
Brabira, *Moore*, Ins. 258
Brachycarpus, *Bate*, Crust. 15
Brachycephalus, *Foerster*, Ins. 195
Brachycrepis, *Ashmead*, Ins. 200

Brachydicrania, *Skuse*, Ins. 282
Brachydrilus, *Benham*, Verm. 18
Brachyemurus, *Hagen*, Ins. 312
Brachyophis, *Mocquard*, Rept. 13
Brachyporus, *Brunner*, Ins. 321
Brazieria, *Ancey*, Moll. 60
Brephoctonus, *Foerster*, Ins. 194
Brosmiculus, *Vaillant*, Pisces 21
Brunnerella, *Saunders*, Ins. 324
Buettueria, *Simroth*, Moll. 58
Buffonella, *Jullien*, Pol. 10
Bugajus, *Brunner*, Ins. 321
Burichura, *Moore*, Ins. 253
Bussa, *Ragonot*, Ins. 266
Butleria, *Brunner*, Ins. 322
Bütschlia, *Schuberg*, Prot. 16
Büttneria, *Karsch*, Ins. 320

Cabotia, *Ragonot*, Ins. 267
Cachexia, *Lewis*, Ins. 107
Cacotropa, *Foerster*, Ins. 196
Cænomeris, *Foerster*, Ins. 194
Calamohydus, *Boulenger*, Rept. 14
Calamophora, *Allman*, Cœl. 18
Calebrina, *Sollas*, Spong. 9
Calera, *Ragonot*, Ins. 270
Calicha, *Moore*, Ins. 252
Calliclisia, *Foerster*, Ins. 194
Callidiotes, *Foerster*, Ins. 195
Callidora, *Foerster*, Ins. 194
Callimaria, *Fairmaire*, Ins. 137
Callipelta, *Sollas*, Spong. 10
Calliphurus, *Foerster*, Ins. 196
Callirhipis, *Saunders*, Ins. 325
Callopristodus, *Truquair*, Pisces 9
Callulops, *Boulenger*, Rept. 26
Calocalanus, *Giesbrecht*, Crust. 22
Calomacraspis, *Bates*, Ins. 118
Caloprimnus, *Thomas*, Mamm. 62
Caloria, *Trinchese*, Moll. 67
Calostropha, *Ancey*, Moll. 60
Calthropella, *Sollas*, Spong. 8
Camacho, *Stebbing*, Crust. 20
Camadena, *Moore*, Ins. 262
Camarotopa, *Foerster*, Ins. 194
Campodorus, *Foerster*, Ins. 196
Campogenes, *Foerster*, Ins. 196
Campoletis, *Foerster*, Ins. 194
Camponastes, *Foerster*, Ins. 196
Campoporus, *Foerster*, Ins. 196
Camporhychia, *Foerster*, Ins. 196
Camposcopus, *Foerster*, Ins. 193
Campotrephus, *Foerster*, Ins. 193
Campothreptus, *Foerster*, Ins. 195
Campylonotus, *Bate*, Crust. 15
Candiope, *Ragonot*, Ins. 265
Cannophysa, *Haeckel*, Cœl. 25

- Caprellinoidea, *Stebbing*, Crust. 20
 Caprellinopsis, *Stebbing*, Crust. 21
 Caravella, *Haeckel*, Coel. 26
 Carcinopsis, *Brunner*, Ins. 322
 Cardenis, *Stebbing*, Crust. 18
 Caricyphus, *Bate*, Crust. 15
 Catalytus, *Foerster*, Ins. 194
 Catastenus, *Foerster*, Ins. 194
 Catilostenus, *Meunier*, Ins. 179
 Cathyalia, *Ragonot*, Ins. 264
 Catoglyptus, *Foerster*, Ins. 195
 Catomicrus, *Thomson*, Ins. 190
 Cavicola, *Ancey*, Moll. 60
 Cawendia, *Karsch*, Ins. 326
 Cayuga, *Hulst*, Ins. 269
 Ceara, *Ragonot*, Ins. 270
 Cellomius, *Lefèvre*, Ins. 164
 Ceraspis, *Schlüter*, Pisces 11
 Ceratocymba, *Chun*, Coel. 23
 Ceratographis, *Gahan*, Ins. 160
 Ceratops, *Cope*, Rept. 18
 Cercalia, *Haeckel*, Coel. 23
 Cercidiella, *Gourret*, Arachn. 13
 Ceriogaster, *Williston*, Ins. 289
 Ceropaleoides, *Radoszkowski*, Ins. 184
 Ceroplastus, *Seidlitz*, Ins. 129
 Ceropsylla, *Riley*, Ins. 307
 Ceryoon, *Rey*, Ins. 96
 Cesserasiectis, *Filhol*, Mamm. 46
 Chæretymma, *Foerster*, Ins. 195
 Chæroparnops, *Dohrn*, Ins. 319
 Chætonymphon, *Sars*, Arachn. 25
 Chalepotaxis, *Ancey*, Moll. 58
 Chamerpes, *Foerster*, Ins. 194
 Chamoezelus, *Foerster*, Ins. 195
 Chandica, *Moore*, Ins. 235
 Characella, *Sollas*, Spong. 7
 Charema, *Moore*, Ins. 262
 Charidea, *Baly*, Ins. 168
 Charisius, *Champion*, Ins. 139
 Chariscapterus, *Sloane*, Ins. 89
 Charitopes, *Foerster*, Ins. 195
 Charora, *Saussure*, Ins. 325
 Chastomera, *Skuse*, Ins. 280
 Cheilocercyon, *Seidlitz*, Ins. 96
 Cheilosmilia, *Koby*, Coel. 27
 Cheirimedon, *Stebbing*, Crust. 19
 Cheiriothrix, *Bate*, Crust. 15
 Cheiropateia, *Bate*, Crust. 14
 Chelidonopsis, *Ancey*, Moll. 79
 Chelynia, *Provancher*, Ins. 178
 Cheramus, *Bate*, Crust. 14
 Chirodines, *Bates*, Ins. 115
 Chirotica, *Foerster*, Ins. 194
 Chiruromya, *Thomas*, Mamm. 40
 Chlænogramma, *Smith*, Ins. 239
 Chlorocharis, *Sharpe*, Aves 61
 Chobera, *Moore*, Ins. 262
 Choilodon, *Filhol*, Mamm. 52
 Chondrenchelys, *Traquair*, Pisces 9
 Chorisichnus, *Foerster*, Ins. 194
 Chorismus, *Bate*, Crust. 13
 Chosroës, *Stebbing*, Crust. 20
 Chriodes, *Foerster*, Ins. 195
 Chrotella, *Sollas*, Spong. 7
 Chrysodon, *Ancey*, Moll. 60
 Chthamaloptyx, *Douglas-Ogilby*, Pisces 15
 Cidaphurus, *Foerster*, Ins. 194
 Cidaphus, *Foerster*, Ins. 193
 Cinachyra, *Sollas*, Spong. 7
 Circalia, *Haeckel*, Coel. 23
 Circica, *Meyrick*, Ins. 277
 Circopora, *Wentzel*, Coel. 21
 Ciris, *Ragonot*, Ins. 270
 Olausocalanus, *Giesbrecht*, Crust. 22
 Claviglia, *Jentink*, Mamm. 39
 Clepsicosma, *Meyrick*, Ins. 261
 Clepsiporthus, *Foerster*, Ins. 195
 Clevelandia, *Eigenmann*, Pisces 19
 Clitoetra, *Simon*, Arachn. 6
 Clubionella, *Gourret*, Arachn. 13
 Cluilius, *Simon*, Arachn. 12
 Clypeomorus, *Jousseaume*, Moll. 71
 Clypoleum, *Gourret & Röser*, Prot. 14
 Cnemischys, *Foerster*, Ins. 195
 Cobalius, *Rey*, Ins. 95
 Cœculisoma, *Berlese*, Arachn. 22
 Cœdiomorpha, *Blackburn*, Ins. 136
 Cœloconus, *Foerster*, Ins. 196
 Cœnochroma, *Ragonot*, Ins. 271
 Cœnodomus, *Walsingham*, Ins. 260
 Cœnotriccus, *Sclater*, Aves 65
 Coleothrix, *Ragonot*, Ins. 265
 Coleoneura, *Ragonot*, Ins. 270
 Coliolus, *Canefri*, Moll. 60
 Colobostylus, *Crosse & Fischer*, Moll. 74
 Colocnema, *Foerster*, Ins. 195
 Colopteryx, *Ridgway*, Aves 65
 Colpodopis, *Gourret & Röser*, Prot. 16
 Comicus, *Brunner*, Ins. 324
 Commatocerodes, *Péringuey*, Ins. 102
 Comorta, *Ragonot*, Ins. 270
 Comostola, *Meyrick*, Ins. 255
 Compaistis, *Meyrick*, Ins. 275
 Conoblasta, *Foerster*, Ins. 194
 Conodes, *Matthews*, Ins. 174
 Conoplectus, *Brendel*, Ins. 102
 Copidognathus, *Trouessart*, Arachn. 24

- Coppatias, *Sollas*, Sp. ng. 9
 Coracopitta, *Slater*, Aves 64
 Cordilites, *Pocock*, Coel. 29
 Cordylochele, *Sars*, Arachn. 25
 Coronura, *Hall & Clarke*, Arachn. 26
 Corticella, *Sollas*, Spong. 9
 Corus, *Pascoe*, Ins. 159
 Corycephalus, *Hall & Clarke*, Arachn. 26
 Corynoporella, *Hincks*, Pol. 8
 Cosmococcus, *Foerster*, Ins. 196
 Cosmozoma, *Karsch*, Ins. 320
 Craniella, *Ehlert*, Brach. 5
 Cremnodes, *Foerster*, Ins. 194
 Crenilepis, *Dumes*, Pisces 12
 Cribraster, *Perrier*, Ech. 13
 Criniscansor, *Poppe*, Arachn. 23
 Crossobamon, *Böttger*, Rept. 7
 Crypsicerus, *Saussure*, Ins. 326
 Cryptotrogus, *Kraatz*, Ins. 116
 Crypsiphona, *Meyrick*, Ins. 255
 Crystallopsis, *Ancey*, Moll. 60
 Otenacme, *Foerster*, Ins. 195
 Ctenocalanus, *Giesbrecht*, Crust. 22
 Ctenochares, *Foerster*, Ins. 195
 Ctenochira, *Foerster*, Ins. 194
 Ctenoneurus, *Bergroth*, Ins. 301
 Culcula, *Moore*, Ins. 257
 Cumnoria, *Seeley*, Rept. 17
 Curupira, *Distant*, Ins. 298
 Cyandra, *Schats*, Ins. 214
 Cyclocaris, *Stebbing*, Crust. 19
 Cyclocyrrha, *Fabre-Domergue*, Prot. 14
 Cyclophiops, *Boulenger*, Rept. 13
 Cylindrodesmus, *Pucock*, Myr. 5
 Cymatophlebia, *Deichmüller*, Ins. 80
 Cymbonectes, *Haeckel*, Coel. 22
 Cymbuliopsis, *Pelsener*, Moll. 57
 Cyrioctea, *Simon*, Arachn. 8
 Cyrtophyllites, *Oppenheim*, Ins. 80
 Cystalia, *Haeckel*, Coel. 25
 Dabasa, *Moore*, Ins. 207
 Dædalopelta, *Sollas*, Spong. 10
 Daëtora, *Foerster*, Ins. 194
 Dahira, *Moore*, Ins. 229
 Daictes, *Foerster*, Ins. 195
 Dapauera, *Karsch*, Ins. 319
 Dapanus, *Foerster*, Ins. 195
 Daria, *Ragonot*, Ins. 265
 Darisa, *Moore*, Ins. 253
 Dasarathra, *Moore*, Ins. 237
 Daspletis, *Foerster*, Ins. 196
 Dasypglene, *Ashmead*, Ins. 200
 Dasypygus, *Ragonot*, Ins. 265
 Dasyltricha, *Schuberg*, Prot. 16
 Decapogon, *Eigenmann*, Pisces 24
 Dedana, *Fairmaire*, Ins. 132
 Deinodrilus, *Beddard*, Verm. 18
 Delagia, *Joyeuse-Laffuis*, Pol. 8
 Deleter, *Foerster*, Ins. 194
 Deloglyptus, *Foerster*, Ins. 195
 Delolytus, *Foerster*, Ins. 195
 Delomerista, *Foerster*, Ins. 194
 Dembea, *Ragonot*, Ins. 270
 Demopheles, *Foerster*, Ins. 195
 Dendragama, *Doria*, Rept. 8
 Deomys, *Thomas*, Mamm. 40
 Derostrophus, *Fairmaire*, Ins. 137
 Desmalia, *Haeckel*, Coel. 23
 Desmotylus, *Marsh*, Mamm. 54
 Deutocaulon, *Marshall & Fowler*, Coel. 34
 Diaborus, *Foerster*, Ins. 195
 Diacritus, *Foerster*, Ins. 195
 Diadegma, *Foerster*, Ins. 194
 Diaglypta, *Foerster*, Ins. 195
 Dialges, *Foerster*, Ins. 196
 Dialipsis, *Foerster*, Ins. 194
 Dianeura, *Butler*, Ins. 231
 Diaparsis, *Foerster*, Ins. 193
 Diaphoropus, *Bate*, Crust. 15
 Diaschizaspis, *Foerster*, Ins. 195
 Diatora, *Foerster*, Ins. 195
 Diazeuxia, *Jullien*, Pol. 10
 Dibelona, *Brunner*, Ins. 323
 Diblastomorpha, *Foerster*, Ins. 194
 Dicrotrodus, *Traquair*, Pisces 9
 Diceratops, *Foerster*, Ins. 194
 Dichistius, *Gill*, Pisces 15
 Dichogaster, *Beddard*, Verm. 18
 Dichrozona, *Ridgway*, Aves 67
 Diculus, *Foerster*, Ins. 194
 Dicranostomus, *Dohrn*, Ins. 319
 Dirocynodon, *Osborn*, Mamm. 63
 Dictyocladium, *Altman*, Coel. 20
 Dicymba, *Haeckel*, Coel. 24
 Diëdrus, *Foerster*, Ins. 195
 Diestrammena, *Brunner*, Ins. 322
 Dilophochila, *Bates*, Ins. 118
 Dimophora, *Foerster*, Ins. 194
 Dindica, *Moore*, Ins. 253
 Dinotomus, *Foerster*, Ins. 195
 Diocles, *Foerster*, Ins. 194
 Diopœnus, *Champion*, Ins. 140
 Dioratica, *Foerster*, Ins. 194
 Dioxippe, *De Mun*, Crust. 13
 Diphascon, *Plate*, Arachn. 25
 Diphyopsis, *Haeckel*, Coel. 23
 Diplasterias, *Perrier*, Ech. 16
 Diplocardia, *Gurman*, Verm. 18
 Diplodontia, *Ashmead*, Ins. 198

- Diplocium, *Kirkpatrick*, Pol. 8
 Diplocyathus, *Allman*, Coel. 20
 Diplogynium, *Berlese*, Arachn. 20
 Dipnoites, *Fritsch*, Pisces 11
 Dirophanes, *Foerster*, Ins. 195
 Discalia, *Haeckel*, Coel. 21
 Disconalia, *Haeckel*, Coel. 21
 Disjectopora, *Wentzel*, Coel. 21
 Disyringa, *Sollas*, Spong. 8
 Dithalama, *Meyrick*, Ins. 255
 Ditrigona, *Moore*, Ins. 256
 Diviana, *Ragonot*, Ins. 267
 Dizemon, *Foerster*, Ins. 195
 Dolichorrhina, *Ragonot*, Ins. 268
 Dolioctonus, *Foerster*, Ins. 196
 Dolophron, *Foerster*, Ins. 194
 Dondersia, *Hubrecht*, Moll. 77
 Doramasia, *Chun*, Coel. 24
 Dorodotes, *Bate*, Crust. 15
 Dorypleures, *Sollas*, Spong. 7
 Doyeria, *Plate*, Arachn. 25
 Dragmastra, *Sollas*, Spong. 8
 Dryapoides, *Stebbing*, Crust. 19
 Duopalatinus, *Eigenmann*, Pisces 23
 Dynamius, *Hasselt*, Arachn. 8
 Dysantes, *Foerster*, Ins. 196
 Dyscapna, *Brunner*, Ins. 322
 Dyspetes, *Foerster*, Ins. 196
 Dysphyllia, *Ragonot*, Ins. 264

 Eoclinops, *Foerster*, Ins. 196
 Eccresis, *Pascoe*, Ins. 155
 Ecdicius, *Distant*, Ins. 297
 Echinodes, *Jacques*, Ins. 153
 Echthronomas, *Foerster*, Ins. 193
 Ecpaglus, *Foerster*, Ins. 195
 Ecphora, *Foerster*, Ins. 194
 Ecporthetor, *Foerster*, Ins. 195
 Ectinocephalus, *Matthews*, Ins. 174
 Ectolabrus, *Sharp*, Ins. 97
 Eczetesis, *Foerster*, Ins. 195
 Eicomorpha, *Staudinger*, Ins. 244
 Eiconaxius, *Bate*, Crust. 14
 Elaposchema, *Mocquard*, Rept. 13
 Elasmodectes, *Smith - Woodward*, Pisces 10
 Elethya, *Ragonot*, Ins. 269
 Eleutherocercus, *Koken*, Mamm. 58
 Elissa, *Casey*, Ins. 144
 Elmomorphus, *Sharp*, Ins. 111
 Elycees, *Jacoby*, Ins. 167
 Emmalocera, *Ragonot*, Ins. 269
 Emodesa, *Moore*, Ins. 256
 Emptera, *Saussure*, Ins. 321
 Euantioliparis, *Vaillant*, Pisces 18
 Enchytraeoides, *Roule*, Verm. 18
 Encrates, *Foerster*, Ins. 195
 Encyocrypta, *Simon*, Arachn. 12
 Endasys, *Foerster*, Ins. 195
 Endophthora, *Meyrick*, Ins. 274
 Eneremius, *Saussure*, Ins. 326
 Enizemum, *Foerster*, Ins. 194
 Encæetis, *Foerster*, Ins. 196
 Ensimus, *Foerster*, Ins. 194
 Entocolax, *Voigt*, Moll. 77
 Entodina, *Ancey*, Moll. 60
 Entomaster, *Gauthier*, Ech. 12
 Entomothele, *Simon*, Arachn. 12
 Entychides, *Simon*, Arachn. 12
 Entypoma, *Foerster*, Ins. 194
 Eoatypus, *McCook*, Arachn. 13
 Eomystis, *Meyrick*, Ins. 276
 Epachthes, *Foerster*, Ins. 196
 Epacra, *Brunner*, Ins. 324
 Epæres, *Foerster*, Ins. 195
 Ephestiodes, *Ragonot*, Ins. 268
 Epichilo, *Ragonot*, Ins. 271
 Epiglymmius, *Lewis*, Ins. 109
 Epilectus, *Blackburn*, Ins. 89
 Epiphobus, *Foerster*, Ins. 195
 Epiphthora, *Meyrick*, Ins. 276
 Epipristia, *Meyrick*, Ins. 253
 Episcopossaurus, *Smith-Woodward*, Rept. 18
 Epistathmus, *Foerster*, Ins. 193
 Epitomus, *Foerster*, Ins. 195
 Epiurus, *Foerster*, Ins. 194
 Erechthis, *Bolivar*, Ins. 320
 Eremochila, *Foerster*, Ins. 194
 Eremopeza, *Saussure*, Ins. 326
 Eremotettix, *Saussure*, Ins. 326
 Eremotylus, *Foerster*, Ins. 193
 Eremus, *Brunner*, Ins. 323
 Eresoides, *Gourret*, Arachn. 13
 Eriborus, *Foerster*, Ins. 194
 Eridolius, *Foerster*, Ins. 195
 Eriglæa, *Foerster*, Ins. 196
 Erigorgus, *Foerster*, Ins. 193
 Eriolus, *Bolivar*, Ins. 320
 Eriplanus, *Foerster*, Ins. 195
 Eriplatys, *Foerster*, Ins. 195
 Eripternus, *Foerster*, Ins. 194
 Ernoctona, *Foerster*, Ins. 195
 Erxias, *Champion*, Ins. 140
 Eryalus, *Pascoe*, Ins. 157
 Erycon, *Rey*, Ins. 96
 Eryma, *Foerster*, Ins. 196
 Erymnochelys, *Baur*, Rept. 20
 Etazeta, *Fairmaire*, Ins. 137
 Ethelurgus, *Foerster*, Ins. 195
 Euarche, *Ehlers*, Verm. 20
 Eucatopta, *Karsch*, Ins. 320
 Eucharella, *Giesbrecht*, Crust. 22
 Eucharimya, *Bigot*, Ins. 236

- Euchasmus*, *Foerster*, Ins. 195
Euclysea, *Lewis*, Ins. 106
Eudaesychira, *Möschler*, Ins. 236
Eudelus, *Foerster*, Ins. 195
Euderou, *Puton*, Ins. 302
Eudoxella, *Haeckel*, Cœl. 22
Eudragana, *Butler*, Ins. 250
Eudromia, *Henderson*, Crust. 13
Euetheola, *Bates*, Ins. 120
Eugnomus, *Foerster*, Ins. 193
Eumegaspilus, *Ashmead*, Ins. 201
Eumeuestiferus, *Meunier*, Ins. 179
Eupetrichthys, *Ramsay & Douglas-Ogilby*, Pisces 21
Eupetaurus, *Thomas*, Mamm. 38
Eurygnathus, *Blackburn*, Ins. 89
Eurymera, *Pfeffer*, Crust. 19
Eurystyla, *Ancey*, Moll. 60
Eurythmia, *Ragonot*, Ins. 268
Eusceliotes, *Stebbing*, Crust. 21
Eusiroides, *Stebbing*, Crust. 20
Eusterinx, *Foerster*, Ins. 194
Eustilbus, *Sharp*, Ins. 107
Eustomias, *Vaillant*, Pisces 27
Eutæniopsis, *Gahan*, Ins. 158
Eutomus, *Foerster*, Ins. 193
Eutrophosa, *Gumpfenberg*, Ins. 259
Euxinastra, *Battger*, Moll. 64
Euzercon, *Berlese*, Arachn. 20
Euzoetria, *Gorham*, Ins. 170
Exacrodus, *Foerster*, Ins. 196
Exochocentrus, *Simon*, Arachn. 6
Exedrium, *Smith*, Ins. 230
Exeristes, *Foerster*, Ins. 194
Exochella, *Jullien*, Pol. 10
Exolytus, *Foerster*, Ins. 195
Exomytæca, *Meyrick*, Ins. 228
- Facalana*, *Bergh*, Moll. 67
Fahrea, *Bergroth*, Ins. 96
Fascicularia, *Lacaze-Duthiers*, Cœl. 33
Faurotis, *Jousseaume*, Moll. 71
Felderia, *Semper*, Ins. 214
Fenestrulina, *Jullien*, Pol. 10
Fenja, *Danielsen*, Cœl. 32
Fenrisia, *Bergh*, Moll. 67
Forskaliopsis, *Haeckel*, Cœl. 24
Fragaroides, *Maurice*, Tun. 5
Fufius, *Simon*, Arachn. 12
Funiculus, *Heude*, Moll. 64
- Gaetanus*, *Giesbrecht*, Crust. 22
Gambrus, *Foerster*, Ins. 195
Gammarotettix, *Brunner*, Ins. 322
Gamotuna, *Moore*, Ins. 257
- Gastrodes*, *Korotnev*, Cœl. 17
Gastroplaxia, *Alvöschler*, Ins. 240
Gastroporus, *Foerster*, Ins. 196
Gausocentrus, *Foerster*, Ins. 195
Gautheria, *Lambert*, Ech. 12
Gemophaga, *Foerster*, Ins. 196
Genarches, *Foerster*, Ins. 195
Genophantis, *Meyrick*, Ins. 269
Genysa, *Simon*, Arachn. 12
Geodercodes, *Casey*, Ins. 146
Geræsta, *Simon*, Arachn. 7
Germanica, *Blackburn*, Ins. 126
Germo, *Jordan*, Pisces 17
Geroecormobius, *Holmberg*, Arachn. 16
Getulia, *Ragonot*, Ins. 267
Giardella, *Canu*, Crust. 23
Gibbulastra, *Monterosato*, Moll. 76
Giraudia, *Foerster*, Ins. 195
Glaphyrosoma, *Brunner*, Ins. 322
Glenarea, *Pocla*, Cœl. 29
Glenida, *Gahan*, Ins. 160
Glossa, *Gourret & Rüser*, Prot. 16
Glyphicnemis, *Foerster*, Ins. 195
Gnathochorisis, *Foerster*, Ins. 193
Gnesia, *Foerster*, Ins. 195
Gnotus, *Foerster*, Ins. 195
Gnypetomorpha, *Foerster*, Ins. 194
Gonatoxia, *Karsch*, Ins. 320
Gonioclema, *Skuse*, Ins. 280
Goniorrhina, *Quedenfeldt*, Ins. 117
Gonixodes, *Duges*, Arachn. 22
Gonolochus, *Foerster*, Ins. 193
Gonophonus, *Foerster*, Ins. 194
Gonotypus, *Foerster*, Ins. 194
Goya, *Ragonot*, Ins. 269
Grammhydræna, *Kuwert*, Ins. 96
Gryllacropsia, *Brunner*, Ins. 322
Gryllopagurus, *Ziets*, Crust. 16
Grynex, *Pascoe*, Ins. 159
Gshelia, *Stuckenberg*, Cœl. 29
Guettaria, *Gauthier*, Ech. 12
Gunopaches, *Foerster*, Ins. 194
Gymnolycodes, *Vaillant*, Pisces 18
Gymnomma, *Wulp*, Ins. 291
Gyrophysoma, *Staudinger*, Ins. 247
- Habromma*, *Foerster*, Ins. 195
Habromyia, *Williston*, Ins. 289
Habronyx, *Foerster*, Ins. 193
Hadrenya, *Rey*, Ins. 96
Hadrodactylus, *Foerster*, Ins. 195
Hæmatochiton, *Gorham*, Ins. 172
Haenhydra, *Rey*, Ins. 96
Haldmanella, *Saussure*, Ins. 326
Halirhotius, *Jacoby*, Ins. 167
Halisiphonia, *Allman*, Cœl. 19

- Halometra*, *Oppenheim*, Ins. 80
Halopyramis, *Chun*, Cœl. 22
Hanoia, *Fairmaire*, Ins. 170
Haplochromia, *Hilgendorf*, Pisces 21
Haplodiscus, *Weldon*, Verm. 26
Haplogale, *Schlosser*, Mamm. 33
Haplothrix, *Gahan*, Ins. 158
Haplotropis, *Saussure*, Ins. 326
Harmandia, *Rochesbrune*, Moll. 79
Harpalodema, *Reitter*, Ins. 91
Harpinoides, *Stebbing*, Crust. 19
Hassar, *Eigenmann*, Pisces 24
Hastina, *Moore*, Ins. 256
Hausmannia, *Hall & Clarke*, Arachn. 26
Haustorius, *Stebbing*, Crust. 21
Hebella, *Allman*, Cœl. 19
Hecatæus, *Jacoby*, Ins. 167
Hectarthropus, *Bate*, Crust. 16
Hedylus, *Foerster*, Ins. 195
Helcostizus, *Foerster*, Ins. 195
Helicoceras, *Weithofer*, Mamm. 51
Heliomystis, *Meyrick*, Ins. 255
Helobata, *Bergroth*, Ins. 95
Helonotocoris, *Lethierry*, Ins. 303
Hemiphanes, *Foerster*, Ins. 194
Hemiptilocera, *Ragonot*, Ins. 264
Hemisaga, *Saussure*, Ins. 321
Hemispeira, *Fabre-Domergue*, Moll. 15
Hemitrichia, *Müllendorff*, Moll. 58
Hemiura, *Ridgway*, Aves 62
Heuschiella, *Horvath*, Ins. 302
Hera, *Schnabl*, Ins. 294
Hersiliodes, *Canu*, Crust. 23
Hetairus, *Bate*, Crust. 15
Heterastræa, *Tomes*, Cœl. 27
Heterocola, *Foerster*, Ins. 193
Heteromallus, *Brunner*, Ins. 323
Heteropsorus, *Trouessart*, Arachn. 23
Heteropterna, *Skuse*, Ins. 281
Heterotypus, *Foerster*, Ins. 195
Heterozercon, *Berlese*, Arachn. 20
Hidryta, *Foerster*, Ins. 195
Himerta, *Foerster*, Ins. 195
Hindcastrea, *Tomes*, Cœl. 27
Hippodactylus, *Cope*, Mamm. 47
Hirasa, *Moore*, Ins. 252
Hodostates, *Foerster*, Ins. 196
Holcohydræna, *Kuwert*, Ins. 96
Holmgrenia, *Foerster*, Ins. 195
Holocremnus, *Foerster*, Ins. 194
Holocrepis, *Foerster*, Ins. 195
Holomeristus, *Foerster*, Ins. 194
Holostrophus, *Horn*, Ins. 141
Homalomina, *Foerster*, Ins. 195
Homaspis, *Foerster*, Ins. 195
Homaspis, *Skuse*, Ins. 282
Homelys, *Foerster*, Ins. 195
Homobia, *Foerster*, Ins. 196
Homœographa, *Ragonot*, Ins. 266
Homotherus, *Foerster*, Ins. 195
Homotropus, *Foerster*, Ins. 194
Hopfferia, *Staudinger*, Ins. 221
Hoplitoblaps, *Fairmaire*, Ins. 134
Hoplitophrys, *Foerster*, Ins. 194
Hoplydræna, *Kuwert*, Ins. 96
Hormogaster, *Rosa*, Verm. 18
Hornibius, *Fairmaire*, Ins. 156
Hornigia, *Ragonot*, Ins. 268
Horogenes, *Foerster*, Ins. 193
Hyadesomyia, *Bigot*, Ins. 293
Hyalospila, *Ragonot*, Ins. 265
Hybophanes, *Foerster*, Ins. 194
Hybristes, *Foerster*, Ins. 196
Hydaspia, *Ragonot*, Ins. 266
Hydrichthys, *Fewkes*, Cœl. 17
Hydrobiomorpha, *Blackburn*, Ins. 94
Hymenonema, *Stokes*, Prot. 14
Hypamblys, *Foerster*, Ins. 196
Hypargyria, *Ragonot*, Ins. 264
Hyperallus, *Foerster*, Ins. 196
Hyperbatus, *Foerster*, Ins. 196
Hyperbæna, *Brunner*, Ins. 323
Hypochilus, *Marx*, Arachn. 7
Hypocophus, *Brunner*, Ins. 322
Hypocryptus, *Foerster*, Ins. 195
Hypoctonus, *Thorell*, Arachn. 14
Hypoleptus, *Foerster*, Ins. 194
Hypomecus, *Foerster*, Ins. 195
Hypopyxis, *Allman*, Cœl. 20
Hyposoter, *Foerster*, Ins. 193
Hypothereutes, *Foerster*, Ins. 194
Hypsipyla, *Ragonot*, Ins. 264
Hypsophila, *Staudinger*, Ins. 247
Icariotis, *Pascoe*, Ins. 155
Ichneops, *Foerster*, Ins. 195
Ictopus, *Bate*, Crust. 16
Idechthis, *Foerster*, Ins. 194
Idemum, *Foerster*, Ins. 195
Ideoronus, *Balzan*, Arachn. 16
Idiogramma, *Foerster*, Ins. 194
Idiolispa, *Foerster*, Ins. 195
Idiostolis, *Foerster*, Ins. 195
Idioxenus, *Foerster*, Ins. 194
Idricus, *Fairmaire*, Ins. 135
Ilapinastes, *Foerster*, Ins. 195
Ilyanthopsis, *Hertwig*, Cœl. 31
Iuguomorpha, *Edwards*, Ins. 241
Inversiula, *Jullien*, Pol. 10
Ipoctonus, *Foerster*, Ins. 195
Irregulatore, *Wentzel*, Cœl. 21
Isadelphus, *Foerster*, Ins. 195

- Isamiopsis*, *Moore*, Ins. 207
Ischnobatis, *Foerster*, Ins. 193
Ischnoscopus, *Foerster*, Ins. 194
Ischnothrix, *Bigot*, Ins. 284
Ischnurgops, *Foerster*, Ins. 194
Ischyopteron, *Oppenheim*, Ins. 80
Ischyriasis, *Foerster*, Ins. 194
Isiromas, *Foerster*, Ins. 195
Iselix, *Foerster*, Ins. 195
Iseropus, *Foerster*, Ins. 194
Isochresta, *Foerster*, Ins. 195
Isodiasta, *Foerster*, Ins. 196
Isognathus, *Kolbe*, Ins. 153
Isonomentia, *Meyrick*, Ins. 272
Isops, *Sollas*, Spong. 9
Isotima, *Foerster*, Ins. 195
Isselosaurus, *Filhol*, Rept. 18
Isurgus, *Foerster*, Ins. 193
Itamoplex, *Foerster*, Ins. 195
Itamus, *Foerster*, Ins. 195
Ithagenea, *Foerster*, Ins. 194
Itopectis, *Foerster*, Ins. 194
- Janarda*, *Moore*, Ins. 257
Johannica, *Blackburn*, Ins. 165
Juvatella, *Bittner*, Brach. 6
- Kaltenbachia*, *Foerster*, Ins. 195
Karenia, *Distani*, Ins. 305
Katona, *Hulst*, Ins. 260
Koninckocidaris, *Dollo & Buissonet*, Ech. 12
Kyamodes, *T. R. Jones*, Crust. 22
Kyphohelophorus, *Kuwert*, Ins. 95
Kyptocaris, *Bate*, Crust. 15
- Labroctonus*, *Foerster*, Ins. 195
Labrostratus, *St. Joseph*, Verm. 21
Labrorychus, *Foerster*, Ins. 193
Labrossyta, *Foerster*, Ins. 196
Lacerna, *Jullien*, Pol. 11
Lachana, *Moore*, Ins. 236
Laepserus, *Foerster*, Ins. 196
Lagarotis, *Foerster*, Ins. 196
Lamachus, *Foerster*, Ins. 196
Lambia, *Blanchard*, Prot. 14
Lantanotherium, *Filhol*, Mamm. 34
Laodamia, *Ragonot*, Ins. 266
Laphyctes, *Foerster*, Ins. 193
Laphyrosopus, *Foerster*, Ins. 195
Larcopyle, *Dreyer*, Prot. 12
Lassaba, *Moore*, Ins. 253
Lathicerus, *Saussure*, Ins. 326
- Lathiponus*, *Foerster*, Ins. 195
Lathrolestes, *Foerster*, Ins. 195
Lathrophagus, *Foerster*, Ins. 196
Lathroplex, *Foerster*, Ins. 194
Lathrostizus, *Foerster*, Ins. 194
Latreillopsis, *Henderson*, Crust. 13
Laufeia, *Hasselt*, Arachn. 8
Laurentia, *Ragonot*, Ins. 270
Lauricius, *Simon*, Arachn. 7
Lebrunaster, *Perrier*, Ech. 13
Lefua, *Herzenstein*, Pisces 25
Leiometopon, *Staudinger*, Ins. 246
Leiotricha, *Fabre-Domergue*, Prot. 14
Leptelmia, *Sharp*, Ins. 111
Leptocalanus, *Giesbrecht*, Crust. 22
Leptoderma, *Vaillant*, Pisces 28
Leptodemas, *Foerster*, Ins. 195
Leptopsalis, *Trouessart*, Arachn. 24
Leptopygus, *Foerster*, Ins. 193
Leptosaces, *Meyrick*, Ins. 275
Leptoecirtus, *Saussure*, Ins. 325
Leptoxena, *Baly*, Ins. 168
Lestophonus, *Williston*, Ins. 295
Leuronotus, *Gahan*, Ins. 157
Liabaris, *Horvath*, Ins. 300
Lictorella, *Allman*, Cœl. 19
Lignyostola, *Mabille*, Ins. 226
Lilæa, *Haeckel*, Cœl. 22
Limnoperma, *Rochebrune*, Moll. 79
Lindia, *Blackburn*, Ins. 136
Lingulosmilia, *Koby*, Cœl. 27
Linophysa, *Haeckel*, Cœl. 25
Lionelita, *Jousseaume*, Moll. 81
Liophalacrus, *Sharp*, Ins. 107
Liopsis, *Foerster*, Ins. 194
Lipobranchius, *Cunningham*, Verm. 20
Lipographis, *Ragonot*, Ins. 267
Listrota, *Foerster*, Ins. 196
Lodiana, *Ragonot*, Ins. 269
Loma, *Hulst*, Ins. 260
Lophochæta, *Stoff*, Verm. 19
Lophophyllus, *Fairmaire*, Ins. 142
Luciopimelodus, *Eigenmann*, Pisces 23
Luconia, *Ragonot*, Ins. 264
Luperocnemus, *Fairmaire*, Ins. 168
Lybanodes, *Gorham*, Ins. 171
Lychnagalma, *Haeckel*, Cœl. 24
Lycoselone, *Möschler*, Ins. 249
Lycosoides, *Gourret*, Arachn. 13
Lyneon, *Foerster*, Ins. 195
Lymira, *Ragonot*, Ins. 270
Lysianax, *Stebbing*, Crust. 21
Lysibia, *Foerster*, Ins. 194
Lysiphragma, *Meyrick*, Ins. 274

- Mabillia*, *Ragonot*, Ins. 264
Machairopus, *Thompson*, Crust. 23
Macleayia, *Blackburn*, Ins. 114
Macraster, *Roemer*, Ech. 13
Macronadata, *Moore*, Ins. 238
Macrorrhinia, *Ragonot*, Ins. 268
Maes, *Fairmaire*, Ins. 143
Magrettia, *Brunner*, Ins. 322
Mahela, *Ragonot*, Ins. 264
Malaxioides, *Fairmaire*, Ins. 167
Maliarpha, *Ragonot*, Ins. 271
Mallobathra, *Meyrick*, Ins. 274
Mallodrya, *Horn*, Ins. 141
Mampava, *Ragonot*, Ins. 270
Mangala, *Ragonot*, Ins. 269
Marcgravia, *Jordan*, Pisces 17
Margelana, *Staudinger*, Ins. 244
Marnia, *Grouvelle*, Ins. 108
Maroussa, *Perkham*, Arachn. 11
Mart a, *Ragonot*, Ins. 271
Maasospondylus, *Lydekker*, Rept. 18
Mastrus, *Foerster*, Ins. 195
Matstigmus, *Simon*, Arachn. 7
Masurius, *Jacoby*, Ins. 167
Meandrusa, *Moore*, Ins. 207
Mecynocera, *Thompson*, Crust. 23
Medophron, *Foerster*, Ins. 195
Megabelophorus, *Kuwert*, Ins. 95
Megalotriton, *Zittel*, Rept. 28
Megameropsis, *Gourret*, Arachn. 24
Megaplectes, *Foerster*, Ins. 195
Megaspilidea, *Ashmead*, Ins. 201
Megotoëssa, *Karsch*, Ins. 320
Melanotrupes, *Blanchard*, Ins. 113
Melitene, *Ragonot*, Ins. 265
Melophysa, *Haeckel*, Cœl. 24
Menes, *Champion*, Ins. 140
Mencœceus, *Champion*, Ins. 140
Menuthia, *Ragonot*, Ins. 270
Merhippolyte, *Bate*, Crust. 15
Meringopus, *Foerster*, Ins. 195
Meristopteryx, *Saussure*, Ins. 325
Mesacanthus, *Traquair*, Pisces 11
Mesalges, *Trouessart*, Arachn. 23
Mesoclistus, *Foerster*, Ins. 194
Mesolia, *Ragonot*, Ins. 269
Mesolimnax, *Pollonera*, Moll. 59
Metacœlus, *Foerster*, Ins. 194
Metacoryna, *Jacoby*, Ins. 167
Metadontia, *Ashmead*, Ins. 198
Methydrus, *Rey*, Ins. 94
Metoponrhia, *Staudinger*, Ins. 248
Micandra, *Staudinger*, Ins. 225
Micrixalus, *Boulenger*, Rept. 25
Microbrachius, *Traquair*, Pisces 10
Microchasmus, *Thomson*, Ins. 189
Microlampas, *Cotteau*, Ech. 13
Micrœum, *Matthews*, Ins. 174
Micromonodon, *Foerster*, Ins. 195
Micronidia, *Moore*, Ins. 256
Micrope, *Foerster*, Ins. 195
Microplectron, *Foerster*, Ins. 195
Microplex, *Foerster*, Ins. 194
Microsaga, *Saussure*, Ins. 321
Microsmilia, *Koby*, Cœl. 29
Microsoma, *Cotteau*, Ech. 13
Microthrix, *Ragonot*, Ins. 267
Microtorus, *Foerster*, Ins. 195
Microtenthis, *Ortmann*, Moll. 55
Millarella, *Carter*, Cœl. 18
Miloderes, *Casey*, Ins. 147
Miomeria, *Foerster*, Ins. 194
Mioscirtus, *Saussure*, Ins. 325
Miraces, *Jacoby*, Ins. 167
Misynus, *Pascoe*, Ins. 152
Mitrophyes, *Haeckel*, Cœl. 22
Miturgina, *Simon*, Arachn. 11
Mnesidacus, *Foerster*, Ins. 194
Moerophora, *Foerster*, Ins. 194
Möllendorffia, *Ancey*, Moll. 62
Mona, *Hulst*, Ins. 269
Monadinium, *Fabre - Domergue*, Prot. 13
Monastesia, *Jullien*, Pol. 8
Montaltus, *Distant*, Ins. 299
Montandoniella, *Puton*, Ins. 302
Monteiron, *Karsch*, Ins. 320
Moridilla, *Bergh*, Moll. 67
Mossamedes, *Simon*, Arachn. 15
Muscidia, *Ragonot*, Ins. 264
Mycetocharoides, *Schaufuss*, Ins. 79
Mycillus, *Distant*, Ins. 298
Mycomyastes, *Gorham*, Ins. 171
Myiopagis, *Godman & Salvin*, Aves 66
Myriactis, *Haddon*, Cœl. 32
Myriarthrus, *Foerster*, Ins. 194
Myrilla, *Distant*, Ins. 305
Naëtes, *Foerster*, Ins. 195
Namangana, *Staudinger*, Ins. 245
Namangana, *Staudinger*, Ins. 248
Narcopœa, *Foerster*, Ins. 196
Narses, *Champion*, Ins. 139
Nauphantopsis, *Fewkes*, Cœl. 26
Nauticarnus, *Bate*, Crust. 15
Nautarachua, *Moniez*, Arachn. 24
Navasota, *Ragonot*, Ins. 271
Neales, *Foerster*, Ins. 196
Neanias, *Brunner*, Ins. 323
Necrophlebia, *Skuse*, Ins. 280
Nectalia, *Haeckel*, Cœl. 24
Nectophysa, *Haeckel*, Cœl. 25

- Neleges*, *Foerster*, Ins. 196
Neleothymus, *Foerster*, Ins. 195
Neleophron, *Foerster*, Ins. 195
Nemanes, *Fairmaire*, Ins. 135
Nemochæta, *Wulp*, Ins. 291
Nemopteryx, *Faust*, Ins. 149
Neocavonus, *Blackburn*, Ins. 122
Neonetus, *Brunner*, Ins. 322
Neophamius, *Reitter*, Ins. 101
Neoplectostomus, *Eigenmann*, Pisces 24
Neorhombolepis, *Smith Woodward*, Pisces 13
Neortus, *Brunner*, Ins. 324
Neoscaphus, *Sloane*, Ins. 89
Neospades, *Blackburn*, Ins. 126
Neosiphonia, *Sollas*, Spong. 10
Neostoma, *Vaillant*, Pisces 26
Neotypus, *Foerster*, Ins. 195
Nepiera, *Foerster*, Ins. 194
Nepiesta, *Foerster*, Ins. 194
Nerula, *Mabille*, Ins. 228
Nesobia, *Ancey*, Moll. 12
Nethea, *Sollas*, Spong. 8
Neumannia, *Trounart*, Arachn. 22
Nicandra, *Fairmaire*, Ins. 134
Nichelius, *Bolivar*, Ins. 327
Noemon, *Foerster*, Ins. 196
Nothocaria, *Bate*, Crust. 15
Notomeris, *Foerster*, Ins. 195
Notophilus, *Blackburn*, Ins. 90
Notopoides, *Henderson*, Crust. 13
Notosemus, *Foerster*, Ins. 195
Novatilla, *Distant*, Ins. 297
Nucleatula, *Bittner*, Brach. 6
Nunechea, *Foerster*, Ins. 195
Nythobia, *Foerster*, Ins. 194
Nythophona, *Foerster*, Ins. 196
Nyxeophilus, *Foerster*, Ins. 195

Ochræsius, *Pascoe*, Ins. 160
Ochranoxia, *Kraatz*, Ins. 116
Ochthornia, *Sclater*, Aves 66
Ocyomorus, *Foerster*, Ins. 195
Odinophora, *Foerster*, Ins. 194
Odontobarbus, *Faust*, Ins. 151
Odontoneura, *Foerster*, Ins. 195
Odontopsis, *Foerster*, Ins. 193
Oediceroides, *Stebbing*, Crust. 20
Oetophorus, *Foerster*, Ins. 195
Olesicampe, *Foerster*, Ins. 194
Olethrodotis, *Foerster*, Ins. 193
Oligochroa, *Ragonot*, Ins. 266
Oligoplectron, *Foerster*, Ins. 194
Oligospira, *Ancey*, Moll. 63
Oinoborus, *Foerster*, Ins. 194
Omorgus, *Foerster*, Ins. 194

Oncista, *Foerster*, Ins. 196
Onesimoides, *Stebbing*, Crust. 19
Onychodectes, *Cope*, Mamm. 33
Onychogymnus, *Quedenfeldt*, Ins. 149
Oodeopus, *Bate*, Crust. 16
Ophicethiopa, *Brock*, Ech. 16
Ophiopteron, *Ludwig*, Ech. 16
Ophiosphæra, *Brock*, Ech. 16
Ophiopila, *Ancey*, Moll. 63
Opidnus, *Foerster*, Ins. 195
Opisthoproctus, *Vaillant*, Pisces 26
Opisthostenus, *Foerster*, Ins. 195
Opseoscapa, *Faust*, Ins. 151
Orætes, *Jacoby*, Ins. 168
Oreana, *Hulst*, Ins. 269
Oreoctistes, *Sharpe*, Aves 59
Orica, *Pascoe*, Ins. 159
Orochirus, *Bolivar*, Ins. 318
Orophioipsis, *Quedenfeldt*, Ins. 145
Orphania, *Bate*, Crust. 16
Orthizema, *Foerster*, Ins. 195
Ortholepis, *Ragonot*, Ins. 265
Orthomesus, *Pilbry*, Moll. 75
Orthoptochus, *Casey*, Ins. 145
Oryctometopia, *Ragonot*, Ins. 264
Oryctopus, *Brunner*, Ins. 321
Osthimosia, *Jullien*, Pol. 11
Ostracina, *Saussure*, Ins. 324
Otacilus, *Jacoby*, Ins. 169
Otacustes, *Foerster*, Ins. 194
Otiaphysa, *Karsch*, Ins. 320
Otitochilus, *Foerster*, Ins. 196
Otlphorus, *Foerster*, Ins. 196
Otoblastus, *Foerster*, Ins. 196
Otophanea, *Brewster*, Aves 69
Ovanelia, *Fairmaire*, Ins. 165
Owenia, *De Vin*, Mamm. 61
Oweniasuchus, *Smith - Woodward*, Rept. 18
Oxychirus, *Quedenfeldt*, Ins. 115
Oxyrrhepis, *Foerster*, Ins. 194
Oxytænia, *Foerster*, Ins. 195
Oxytorus, *Foerster*, Ins. 195

Pachmya, *Fairmaire*, Ins. 111
Pachycynodon, *Schlosser*, Mamm. 31
Pachylælaps, *Berlese*, Arachn. 20
Pachyrhamma, *Brunner*, Ins. 322
Pachyneuria, *Mabille*, Ins. 229
Pachypsilla, *Riley*, Ins. 307
Pachyparnus, *Fairmaire*, Ins. 111
Paguroides, *Henderson*, Crust. 13
Paguroopsis, *Henderson*, Crust. 13
Palæohatteria, *Credner*, Rept. 22
Palæomania, *Forsyth-Major*, Mamm. 57

- Palaotapirus*, *Filhol*, Mamm. 45
Paliscaphus, *Sloane*, Ins. 89
Palmerstonia, *Blackburn*, Ins. 121
Pammachus, *Foerster*, Ins. 195
Pammicra, *Foerster*, Ins. 195
Panambus, *Stebbing*, Crust. 21
Panargyrope, *Foerster*, Ins. 195
Pannucha, *Moore*, Ins. 260
Panormus, *Casey*, Ins. 146
Panschizus, *Blackburn*, Ins. 120
Pantelea, *Foerster*, Ins. 194
Panthalia, *Cameron*, Ins. 199
Pantoporthus, *Foerster*, Ins. 196
Pantolepta, *Karsch*, Ins. 319
Pantolipa, *Foerster*, Ins. 195
Pantorhæstes, *Foerster*, Ins. 196
Pantosperma, *Meyrick*, Ins. 277
Pantropa, *Foerster*, Ins. 194
Parabates, *Foerster*, Ins. 193
Parabatus, *Thomson*, Ins. 190
Parachrysa, *Bates*, Ins. 119
Paractora, *Bigot*, Ins. 294
Paracercyon, *Seidlitz*, Ins. 96
Paradryope, *Stebbing*, Crust. 19
Parægus, *Gahan*, Ins. 112
Paragryllacris, *Brunner*, Ins. 323
Paralpheus, *Bate*, Crust. 15
Parammœcius, *Seidlitz*, Ins. 113
Paramarphyssa, *Ehlers*, Verm. 21
Paranacæna, *Blackburn*, Ins. 94
Paraphylax, *Foerster*, Ins. 195
Paraplesius, *Foerster*, 196
Parathanas, *Bate*, Crust. 15
Paratritoma, *Gorham*, Ins. 171
Paraulaca, *Buly*, Ins. 166
Paraxinus, *Bate*, Crust. 14
Parbattia, *Moore*, Ins. 263
Parisolea, *Bates*, Ins. 119
Patania, *Moore*, Ins. 261
Patellastra, *Monterosato*, Moll. 76
Patna, *Ragonot*, Ins. 269
Paura, *Karsch*, Ins. 319
Pazala, *Moore*, Ins. 207
Pectinigeria, *Ragonot*, Ins. 270
Pœtula, *Moore*, Ins. 251
Peltotrupes, *Blanchard*, Ins. 113
Pemmatiles, *Dunikowski*, Spong. 7
Pemon, *Foerster*, Ins. 194
Pentacantha, *Ashmead*, Ins. 201
Peoria, *Ragonot*, Ins. 271
Peribyssus, *Puton*, Ins. 297
Periclystus, *Gerstaecker*, Ins. 311
Perilissus, *Foerster*, Ins. 195
Peringueyella, *Saussure*, Ins. 321
Perisiphonia, *Allman*, Cœl. 19
Perispuda, *Foerster*, Ins. 196
Peritelinus, *Casey*, Ins. 146
Peritelodes, *Casey*, Ins. 145
Peritænius, *Foerster*, Ins. 195
Peronura, *Karsch*, Ins. 319
Perosis, *Foerster*, Ins. 194
Peruda, *Distant*, Ins. 298
Petaluma, *Hulst*, Ins. 269
Petauroides, *Thomas*, Mamm. 62
Peteinura, *Bate*, Crust. 14
Pezolochus, *Foerster*, Ins. 194
Pezoporus, *Foerster*, Ins. 195
Phædroctonus, *Foerster*, Ins. 194
Phænosemus, *Foerster*, Ins. 194
Phæstus, *Foerster*, Ins. 196
Phagesorus, *Foerster*, Ins. 196
Phalangillum, *Gourret*, Arachn. 16
Phamislus, *Reitter*, Ins. 101
Phaneroœerus, *Saussure*, Ins. 325
Phaneroporus, *Simroth*, Moll. 59
Phatnacia, *Foerster*, Ins. 195
Phedius, *Champion*, Ins. 140
Pherterus, *Brunner*, Ins. 322
Phialactis, *Fowler*, Cœl. 31
Phidotricha, *Ragonot*, Ins. 265
Philonicus, *Bate*, Crust. 14
Philonygmus, *Foerster*, Ins. 195
Philotherma, *Möschler*, Ins. 240
Philotymma, *Foerster*, Ins. 196
Phlaurocentrum, *Karsch*, Ins. 320
Phobetes, *Foerster*, Ins. 195
Phobocampe, *Foerster*, Ins. 194
Phœbophilus, *Staudinger*, Ins. 244
Phœnolobus, *Foerster*, Ins. 194
Phonicosia, *Jullien*, Pol. 11
Phorcorrhapis, *Stebbing*, Crust. 21
Phothydræna, *Kuwert*, Ins. 96
Photodrilus, *Moniez*, Verm. 18
Photoscotosia, *Warren*, Ins. 259
Phoxocephalus, *Stebbing*, Crust. 21
Phoxogenys, *Gorham*, Ins. 173
Phradis, *Foerster*, Ins. 193
Phrudus, *Foerster*, Ins. 195
Phryxotrichus, *Simon*, Arachn. 12
Phthorima, *Foerster*, Ins. 194
Phtisica, *Stebbing*, Crust. 21
Phycilopsis, *Ragonot*, Ins. 265
Phygasia, *Weise*, Ins. 165
Phyrama, *Karsch*, Ins. 319
Phytus, *Foerster*, Ins. 195
Phyzelus, *Foerster*, Ins. 195
Picroscopus, *Foerster*, Ins. 195
Picrostigeus, *Foerster*, Ins. 194
Pilinopyga, *Kraatz*, Ins. 124
Pilochrota, *Solli*, Spong. 8
Pilsbrya, *Ancey*, Moll. 63
Pima, *Hulst*, Ins. 268
Pimelata, *Pascoe*, Ins. 150
Pimelodella, *Eigenmann*, Pisces 23
Pitama, *Moore*, Ins. 262
Pitholaus, *Champion*, Ins. 140

- Pithotomus, *Kreichbaumer*, Ins. 188
 Placohelia, *Pocla*, Coel. 27
 Placopyle, *Dreyer*, Prot. 12.
 Plagiomus, *Quedenfeldt*, Ins. 159
 Plangiopsis, *Karsch*, Ins. 320
 Platamon, *Stebbing*, Crust. 19
 Platebema, *Bate*, Crust. 15
 Platenia, *Dohrn*, Ins. 319
 Platyprosopos, *Filhol*, Mamm. 52
 Platyischnopus, *Stebbing*, Crust. 18
 Platymorpha, *Jacoby*, Ins. 168
 Platypedia, *Uhler*, Ins. 305
 Platyrutela, *Bates*, Ins. 118
 Platysacus, *Bate*, Crust. 14
 Platysiagon, *Brunner*, Ins. 322
 Plegmatoptera, *Karsch*, Ins. 319
 Pleroma, *Sollas*, Spong. 10
 Plesignathus, *Foerster*, Ins. 195
 Plesiocyon, *Schlosser*, Mamm. 32
 Plesiomma, *Foerster*, Ins. 195
 Plesionika, *Bate*, Crust. 15
 Plesiophthalmus, *Foerster*, Ins. 194
 Plestia, *Mabille*, Ins. 226
 Pleurochila, *Ragonot*, Ins. 266
 Pleurocoelus, *Marsh*, Rept. 18
 Pleuroxia, *Ancey*, Moll. 63
 Pliolampas, *Poinel*, Ech. 13
 Plœophysa, *Fewkes*, Coel. 25
 Pneumophysa, *Haeckel*, Coel. 25
 Podapolipus, *Berlese*, Arachn. 19
 Podobursa, *Wisniewski*, Prot. 13
 Podoces, *Péringuey*, Ins. 134
 Podolaps, *Berlese*, Arachn. 20
 Podoneura, *Bergroth*, Ins. 283
 Pœcillastra, *Sollas*, Spong. 7
 Pogon-neura, *Ragonot*, Ins. 266
 Poliopsar, *Sharpe*, Aves. 59
 Polyaulon, *Foerster*, Ins. 194
 Polyaspis, *Simon*, Arachn. 12
 Polyclistus, *Foerster*, Ins. 194
 Polycinetis, *Foerster*, Ins. 195
 Polygrapha, *Schatz*, Ins. 215
 Polyidus, *Champion*, Ins. 140
 Polyoncus, *Foerster*, Ins. 195
 Polyphyæ, *Haeckel*, Coel. 23
 Polypystis, *Foerster*, Ins. 196
 Polyplastus, *Janson*, Ins. 124
 Polyrhombia, *Foerster*, Ins. 195
 Polyrhysia, *Foerster*, Ins. 196
 Polyterus, *Foerster*, Ins. 196
 Polytrera, *Foerster*, Ins. 196
 Polytribax, *Foerster*, Ins. 195
 Pontocaris, *Bate*, Crust. 15
 Popella, *Richard*, Crust. 23
 Poraniopsis, *Perrier*, Ech. 13
 Porocallus, *Sharp*, Ins. 97
 Porpalia, *Haeckel*, Coel. 22
 Porpema, *Haeckel*, Coel. 22
 Porphyrobapta, *Kraatz*, Ins. 124
 Porpitella, *Haeckel*, Coel. 22
 Porpostoma, *Möbius*, Prot. 16
 Potamia, *Ehlers*, Verm. 22
 Poujadia, *Ragonot*, Ins. 269
 Pramadea, *Moore*, Ins. 261
 Priconodon, *Marsh*, Rept. 18
 Priocnemioidea, *Radoszkowski*, Ins. 184
 Priscillina, *Stebbing*, Crust. 21
 Pristiloma, *Ancey*, Moll. 63
 Probles, *Foerster*, Ins. 193
 Probopyrus, *Giard & Bonnier*, Crust. 16
 Procinetus, *Foerster*, Ins. 194
 Proclitus, *Foerster*, Ins. 194
 Procletea, *Bate*, Crust. 16
 Prodysdera, *Gourret*, Arachn. 13
 Prodrus, *Foerster*, Ins. 193
 Promethes, *Foerster*, Ins. 194
 Promylea, *Ragonot*, Ins. 265
 Prosmorus, *Foerster*, Ins. 195
 Protacanthodes, *Gill*, Pisces 29
 Protarchus, *Foerster*, Ins. 196
 Protellopsis, *Stebbing*, Crust. 20
 Prothelmins, *Linstow*, Verm. 27
 Protinodes, *Sharp*, Ins. 98
 Protis, *Ehlers*, Verm. 22
 Protochersis, *Gourret*, Arachn. 13
 Protocolletis, *Meyrick*, Ins. 263
 Protochrysopa, *Kolbe*, Ins. 313
 Protolachesia, *Gourret*, Arachn. 13
 Protolindenia, *Deichmüller*, Ins. 80
 Protolycosa, *Gourret*, Arachn. 13
 Protoscalidion, *Schaufuss*, Ins. 79
 Protragoceros, *Weithofer*, Mamm. 51
 Prunopyle, *Dreyer*, Prot. 12
 Psammastra, *Sollas*, Spong. 8
 Pseudaletis, *Druce*, Ins. 222
 Pseudamphicyon, *Schlosser*, Mamm. 31
 Pseudelissa, *Cusey*, Ins. 144
 Pseudectis, *Schlosser*, Mamm. 33
 Pseudobrosicus, *Semenow*, Ins. 90
 Pseudocania, *Stuckenberg*, Coel. 26
 Pseudochelylus, *Berlese*, Arachn. 22
 Pseudochloris, *Sharpe*, Aves 53
 Pseudocyclophis, *Bettger*, Rept. 13
 Pseudoferreola, *Radoszkowski*, Ins. 184
 Pseudohaptoderus, *Tschitscherine*, Ins. 92
 Pseudohydrophilus, *Deichmüller*, Ins. 79
 Pseudolimnæum, *Kraatz*, Ins. 93
 Pseudolybas, *Gorham*, Ins. 171

- Pseudomutilla*, *Costa*, Ins. 185
Pseudonotodonta, *Möschler*, Ins. 236
Pseudopachygnathus, *Gourret*, Arachn. 24
Pseudopimelopus, *Blackburn*, Ins. 121
Pseudoplatyura, *Skuse*, Ins. 282
Pseudorhiza, *Lendenfeld*, Cœl. 26
Pseudosterrha, *Warren*, Ins. 257
Pseudothecosmilia, *Koby*, Cœl. 28
Pseudothomisus, *Gourret*, Arachn. 13
Pseudotocerus, *Champion*, Ins. 138
Pseudotritoma, *Gorham*, Ins. 173
Pilosage, *Foerster*, Ins. 196
Pilotrix, *Gourret & Röser*, Prot. 15
Pteleon, *Jacoby*, Ins. 168
Ptenomela, *Bates*, Ins. 119
Pteralopex, *Thomas*, Mamm. 35
Pterocormus, *Foerster*, Ins. 195
Pterodracon, *Lydekker*, Rept. 17
Pterothrix, *Ragonot*, Ins. 264
Pterotomus, *Quedenfeldt*, Ins. 148
Ptychostylus, *Ancey*, Moll. 63
Pycnophlebia, *Deichmüller*, Ins. 80
Pygastrides, *Loven*, Ech. 13
Pygospatangus, *Cotteau*, Ech. 13
Pyla, *Ragonot*, Ins. 266
Pyrgophorus, *Ancey*, Moll. 72

Radiocyphus, *Cotteau*, Ech. 12
Ragonotia, *Grote*, Ins. 270
Rhachella, *Sollus*, Spong. 9
Rhadinacanthus, *Traquair*, Pisces 11
Rhadina, *Foerster*, Ins. 194
Rhadinocera, *Foerster*, Ins. 195
Rhadiurgus, *Foerster*, Ins. 195
Rhaestes, *Foerster*, Ins. 195
Rhagola, *Moore*, Ins. 262
Rhamphobranchium, *Ehlers*, Verm. 12
Rhectophebeia, *Ragonot*, Ins. 264
Rhegmatothila, *Standfuss*, Ins. 238
Rhegmatorhina, *Kidgway*, Aves 67
Rhemobius, *Foerster*, Ins. 195
Rhexidermus, *Foerster*, Ins. 195
Rhexineura, *Foerster*, Ins. 194
Rhigelus, *Foerster*, Ins. 196
Rhimphalea, *Foerster*, Ins. 196
Rhimphoctona, *Foerster*, Ins. 194
Rhinocalamus, *Günther*, Rept. 22
Rhinotorus, *Foerster*, Ins. 196
Rhinopsylla, *Riley*, Ins. 307
Rhodalia, *Haeckel*, Cœl. 25
Rhodospingus, *Sharpe*, Aves 53

Rhodospiza, *Sharpe*, Aves 53
Rhomaleocaris, *Bate*, Crust. 15
Rhombognathus, *Trouessart*, Arachn. 24
Rhorus, *Foerster*, Ins. 195
Rhyssotina, *Ancey*, Moll. 63
Rhyssotopsis, *Ancey*, Moll. 63
Rhythmonotus, *Foerster*, Ins. 193
Riddleia, *Dendy*, Spong. 7
Rileya, *Howard*, Ins. 199
Risibia, *Horvath*, Ins. 297
Rodaba, *Moore*, Ins. 260
Romancheina, *Jullien*, Pol. 11
Rossophyllum, *Stuckenburg*, Cœl. 29
Rozonia, *Fairmaire*, Ins. 133
Runeca, *Moore*, Ins. 255
Rutelisca, *Bates*, Ins. 119

Saborma, *Ragonot*, Ins. 269
Sadala, *Peckham*, Arachn. 9
Sagephora, *Meyrick*, Ins. 274
Salacia, *Haeckel*, Cœl. 28
Saltuinus, *Simon*, Arachn. 11
Saluda, *Hulst*, Ins. 260
Samotherium, *Forsyth - Major*, Mamm. 52
Saotia, *Foerster*, Ins. 196
Saphocallus, *Sharp*, Ins. 97
Sapotes, *Cusey*, Ins. 147
Sarama, *Moore*, Ins. 260
Sarata, *Ragonot*, Ins. 267
Sarcorychus, *Foerster*, Ins. 196
Sathropterus, *Foerster*, Ins. 193
Satzicus, *Simon*, Arachn. 12
Saulister, *Péringuey*, Ins. 106
Scallasis, *Bate*, Crust. 14
Scaphengis, *Gorham*, Ins. 172
Scapheutes, *Handlirsch*, Ins. 181
Scelidopsis, *Jacoby*, Ins. 167
Schematizella, *Jacoby*, Ins. 167
Schenkia, *Foerster*, Ins. 195
Schistospiza, *Sharpe*, Aves 53
Schizonotus, *Thorell*, Arachn. 13
Schizopoma, *Foerster*, Ins. 193
Schizosmilia, *Koby*, Cœl. 28
Sciaccaris, *Bate*, Crust. 14
Sciadeoides, *Eigenmann*, Pisces 23
Scina, *Stebbing*, Crust. 21
Scinacopus, *Foerster*, Ins. 195
Scintillula, *Jousseaume*, Moll. 81
Sciota, *Hulst*, Ins. 269
Sclerogibba, *Riggio & de Stefani*, Ins. 202
Sclerosmilia, *Koby*, Cœl. 28
Scœother, *Gorham*, Ins. 172
Scoarches, *Foerster*, Ins. 196
Scopelogadus, *Vaillant*, Pisces 16

- Scopesia*, *Foerster*, Ins. 196
Scopiorus, *Foerster*, Ins. 195
Scopocera, *Moore*, Ins. 260
Scoriodyta, *Meyrick*, Ins. 273
Scotocampa, *Staudinger*, Ins. 246
Sematoneura, *Ragonot*, Ins. 264
Semnophrys, *Foerster*, Ins. 194
Sempronia, *Ragonot*, Ins. 266
Sestertius, *Bate*, Crust. 14
Sheldonia, *Ancey*, Moll. 63
Sichelia, *Foerster*, Ins. 194
Sigmarrhina, *Ragonot*, Ins. 266
Signoretia, *Kraatz*, Ins. 308
Sigrioma, *Fuirmaire*, Ins. 162
Siler, *Hasselt*, Arachn. 8
Sinophorus, *Foerster*, Ins. 194
Siphonocrinus, *Wachsmuth & Springer*, Ech. 15
Sminthopsis, *Thomas*, Mamm. 62
Sobas, *Foerster*, Ins. 195
Socarnioides, *Stebbing*, Crust. 19
Socora, *Ragonot*, Ins. 270
Sophrosyne, *Stebbing*, Crust. 19
Sormida, *Gahan*, Ins. 189
Sosippus, *Simon*, Arachn. 11
Spanotecnus, *Foerster*, Ins. 195
Sphacophilus, *Provancher*, Ins. 205
Sphaenhydræna, *Kuwert*, Ins. 96
Sphæropyle, *Dreyer*, Prot. 12
Sphincterochila, *Ancey*, Moll. 63
Spilocephalus, *Jacoby*, Ins. 169
Spinocalanus, *Giesbrecht*, Crust. 22
Spinolia, *Foerster*, Ins. 194
Spongopyle, *Dreyer*, Prot. 12
Spudæa, *Foerster*, Ins. 196
Spudastica, *Foerster*, Ins. 194
Stæba, *Sollas*, Spong. 8
Staiannus, *Simon*, Arachn. 7
Statina, *Ragonot*, Ins. 271
Stamoderes, *Casey*, Ins. 144
Staurothera, *Allman*, Coel. 20
Stebbingia, *Pfeffer*, Crust. 19
Steganops, *Foerster*, Ins. 194
Stegosoma, *Chun*, Tun. 4
Steindachneria, *Eigenmann*, Pisces 23
Stellenigris, *Meunier*, Ins. 179
Stemmaphora, *Staudinger*, Ins. 247
Stenogale, *Schlosser*, Mamm. 33
Stenolepis, *Boulenger*, Rept. 10
Stenomacrus, *Foerster*, Ins. 194
Stenopleura, *Stebbing*, Crust. 19
Stenoptochus, *Casey*, Ins. 145
Stephalia, *Haeckel*, Coel. 25
Stephanidium, *Hertwig*, Coel. 33
Stephanophora, *Kirkpatrick*, Pol. 9
Stephanophyes, *Chun*, Coel. 23
Stephonalia, *Haeckel*, Coel. 25
Stergusa, *Hasselt*, Arachn. 8
Sternocoelia, *Lewis*, Ins. 106
Sternoptychides, *Douglas - Ogilby*, Pisces 27
Steropanus, *Fuirmaire*, Ins. 91
Sterotrichus, *Foerster*, Ins. 194
Stibeutes, *Foerster*, Ins. 195
Stiboscopus, *Foerster*, Ins. 195
Stilbops, *Foerster*, Ins. 194
Stiphrosomus, *Foerster*, Ins. 195
Stobæus, *Fuirmaire*, Ins. 91
Stochasmus, *Bate*, Crust. 15
Stoliczkiella, *Carter*, Coel. 18
Stomaporus, *Cotteau*, Ech. 13
Stomatosphæra, *Dreyer*, Prot. 12
Strepsicrates, *Meyrick*, Ins. 273
Strepsimallus, *Foerster*, Ins. 195
Striaria, *Bollman*, Myr. 5
Strobalia, *Haeckel*, Coel. 24
Strotarchus, *Simon*, Arachn. 12
Stryphnus, *Sollas*, Spong. 8
Stueria, *Schlumberger*, Ech. 12
Stylopus, *Friedt*, Spong. 6
Stygera, *Foerster*, Ins. 195
Succadana, *Ragonot*, Ins. 265
Susia, *Ragonot*, Ins. 264
Synæma, *Foerster*, Ins. 195
Sychnoleter, *Foerster*, Ins. 195
Sychnoportus, *Foerster*, Ins. 196
Syennesis, *Pascoe*, Ins. 154
Symboethus, *Foerster*, Ins. 196
Sympherta, *Foerster*, Ins. 195
Symphobus, *Foerster*, Ins. 195
Symphronoe, *Stebbing*, Crust. 18
Symplecia, *Foerster*, Ins. 193
Symphodoichthys, *Fucciola*, Pisces 22
Symptratia, *Foerster*, Ins. 193
Sympyla, *Sollas*, Spong. 10
Synagrypnus, *Foerster*, Ins. 196
Synalpheus, *Bate*, Crust. 15
Syndipnus, *Foerster*, Ins. 196
Syneches, *Foerster*, Ins. 194
Synetaeria, *Foerster*, Ins. 194
Synodites, *Foerster*, Ins. 196
Synoecetes, *Foerster*, Ins. 196
Synomelix, *Foerster*, Ins. 196
Synoplus, *Foerster*, Ins. 194
Synopioides, *Stebbing*, Crust. 20
Synoria, *Ragonot*, Ins. 267
Syntactus, *Foerster*, Ins. 196
Syringobia, *Trouessart*, Arachn. 22
Syrphoctonus, *Foerster*, Ins. 194
Systellaspia, *Bate*, Crust. 15
Syzeuctus, *Foerster*, Ins. 194

- Tachyporthus, *Foerster*, Ins. 196
 Tacoma, *Hulst*, Ins. 269.
 Taenhydræna, *Kuwert*, Ins. 96
 Talamba, *Ragonot*, Ins. 270
 Tallonia, *Simon*, Arachn. 11
 Tallula, *Hulst*, Ins. 269
 Tamera, *Moore*, Ins. 207
 Tampa, *Ragonot*, Ins. 271
 Taphrocephala, *Quedenfeldt*, Ins. 117
 Tapinopa, *Foerster*, Ins. 194
 Taschenbergia, *Schmiedeknecht*, Ins. 192
 Tauroscopa, *Meyrick*, Ins. 271
 Tautozelus, *Foerster*, Ins. 196
 Tectulipora, *Hall*, Pol. 7
 Tehama, *Hulst*, Ins. 269
 Telebolus, *Marshall*, Ins. 197
 Telesicles, *Champion*, Ins. 140
 Teleudrilus, *Rosa*, Verm. 19
 Teliphasa, *Moore*, Ins. 260
 Telutaea, *Foerster*, Ins. 194
 Temelucha, *Foerster*, Ins. 193
 Temnes, *Champion*, Ins. 139
 Temnopalpus, *Blackburn*, Ins. 141
 Terozoa, *Foerster*, Ins. 195
 Terpiphora, *Foerster*, Ins. 195
 Tetartopeus, *Oswaldina*, Ins. 99
 Tetrabalius, *Thorell*, Arachn. 14
 Tetramerotropia, *Saussure*, Ins. 324
 Tetrodontina, *Ancey*, Moll. 63
 Thaleridia, *Moore*, Ins. 258
 Thaumactis, *Fowler*, Coel. 33
 Thaumatotypus, *Foerster*, Ins. 194
 Theatetes, *Champion*, Ins. 139
 Thecidiosmilia, *Koby*, Coel. 28
 Therescopus, *Foerster*, Ins. 194
 Thermonotus, *Gahan*, Ins. 158
 Thia, *Edwards*, Ins. 231
 Thospia, *Ragonot*, Ins. 267
 Thrombus, *Sollas*, Spong. 9
 Thursius, *Traquair*, Pisces 12
 Thylodroma, *Stejneger*, Aves 93
 Thymaris, *Foerster*, Ins. 193
 Thyreobæus, *Simon*, Arachn. 6
 Thyridiphora, *Warren*, Ins. 248
 Thysiotorus, *Foerster*, Ins. 195
 Tiarra, *Ragonot*, Ins. 270
 Titanomis, *Meyrick*, Ins. 274
 Tlemon, *Foerster*, Ins. 196
 Tolima, *Ragonot*, Ins. 269
 Tolmerus, *Foerster*, Ins. 195
 Tomobrachyta, *Fairmaire*, Ins. 155
 Topadesa, *Moore*, Ins. 272
 Trachylophus, *Gahan*, Ins. 154
 Trachystoma, *Douglas-Ogilby*, Pisces 19
 Tranosema, *Foerster*, Ins. 194
 Trapezochora, *Foerster*, Ins. 196
 Traumatophora, *Ancey*, Moll. 63
 Trestia, *Foerster*, Ins. 194
 Tretolophus, *Sollas*, Spong. 10
 Triæga, *Hulst*, Ins. 260
 Tribelosodon, *Bussani*, Rept. 17
 Tricamptus, *Foerster*, Ins. 195
 Tricca, *Simon*, Arachn. 11
 Trichelix, *Ancey*, Moll. 63
 Trichocalymma, *Foerster*, Ins. 195
 Tricholinum, *Foerster*, Ins. 195
 Trichohelophorus, *Kuwert*, Ins. 95
 Trichopelma, *Simon*, Arachn. 12
 Trichopsomyia, *Williston*, Ins. 287
 Trichotoxon, *Simroth*, Moll. 59
 Triclis, *De Vis*, Mamm. 62
 Triclistus, *Foerster*, Ins. 194
 Tricuspodon, *Lemoine*, Mamm. 64
 Tridenchthonius, *Balsan*, Arachn. 16
 Trigonobothrys, *Simon*, Arachn. 7
 Trihoplophora, *Brunner*, Ins. 322
 Trimitomerus, *Horn*, Ins. 141
 Triptolemus, *Sollas*, Spong. 8
 Trisacra, *Foerster*, Ins. 194
 Trizygia, *Skuse*, Ins. 282
 Troctocerus, *Schmiedeknecht*, Ins. 192
 Tromatobia, *Foerster*, Ins. 194
 Tromera, *Foerster*, Ins. 194
 Tromopæa, *Foerster*, 196
 Trophoctonus, *Foerster*, Ins. 196
 Tropidomyia, *Williston*, Ins. 289
 Tropiocaris, *Bate*, Crust. 16
 Trychosis, *Foerster*, Ins. 195
 Tryscampe, *Foerster*, Ins. 196
 Tugela, *Ragonot*, Ins. 270
 Tycherus, *Foerster*, Ins. 195
 Tyntlobia, *Fairmaire*, Ins. 135
 Udenia, *Foerster*, Ins. 196
 Uinta, *Hulst*, Ins. 269
 Ulomoides, *Blackburn*, Ins. 136
 Ulothymus, *Foerster*, Ins. 195
 Undella, *Daday*, Prot. 15
 Undenchæta, *Giesbrecht*, Crust. 22
 Uphelognatos (? Uphelognathus), *Filhol*, Mamm. 53
 Urapteroides, *Moore*, Ins. 256
 Urielina, *Reitter*, Ins. 134
 Urithreptus, *Foerster*, Ins. 195
 Urmiatherium, *Rodler*, Mamm. 52
 Urolitha, *Meyrick*, Ins. 254
 Uropodella, *Berlese*, Arachn. 20
 Uroptychus, *Henderson*, Crust. 14
 Urosejus, *Berlese*, Arachn. 20

- Valdivia*, *Ragonot*, Ins. 267
Valettia, *Stebbing*, Crust. 20
Varmina, *Moore*, Ins. 240
Verticinotus, *Brendel*, Ins. 101
Vetrovermia, *Inhof*, Verm. 19
Viridasius, *Simon*, Arachn. 12
Vitula, *Ragonot*, Ins. 268
Vosmeria, *Fristedt*, Spong. 7
Vulsor, *Simon*, Arachn. 12

Wanda, *Hulst*, Ins. 260
Weissenbornia, *Karsch*, Ins. 319
Welaka, *Hulst*, Ins. 269
Winona, *Hulst*, Ins. 260

Xenacia, *Foerster*, Ins. 194
Xenobrachya, *Foerster*, Ins. 195
Xenodocon, *Foerster*, Ins. 195
Xenolytus, *Foerster*, Ins. 194
Xenonastes, *Foerster*, Ins. 196
Xenoschesia, *Foerster*, Ins. 194
Xestophyes, *Foerster*, Ins. 195
Xiphosaga, *Saussure*, Ins. 321

Xylonomus, *Foerster*, Ins. 194
Xylophrurus, *Foerster*, Ins. 194
Xyridacma, *Meyrick*, Ins. 252

Zacalles, *Foerster*, Ins. 196
Zachresta, *Foerster*, Ins. 193
Zaglyptus, *Foerster*, Ins. 194
Zanclifer, *Henderson*, Crust. 13
Zantes, *Pascoe*, Ins. 151
Zapedias, *Foerster*, Ins. 196
Zaphleges, *Foerster*, Ins. 195
Zaphthora, *Foerster*, Ins. 196
Zaplethis, *Foerster*, Ins. 196
Zaporus, *Foerster*, Ins. 194
Zaramella, *Stebbing*, Crust. 20
Zatypota, *Foerster*, Ins. 194
Zemiophora, *Foerster*, Ins. 196
Zemiophron, *Foerster*, Ins. 196
Zemiodes, *Foerster*, Ins. 195
Zetorchestes, *Berlese*, Arachn. 19
Zeuneria, *Karsch*, Ins. 320
Zoontocaris, *Bate*, Crust. 14
Zoophthorus, *Foerster*, Ins. 195
Zootrephea, *Foerster*, Ins. 194
Zorocrates, *Simon*, Arachn. 8

END OF THE TWENTY-FIFTH VOLUME.









016.59
2872

Zoological
V. 25, 1886

NAME

DATE

Q. 1886
P. M. Deane
E. A. Smith

7-25-24
4-27-32
April 13, 1940

10758

